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HANDBOOK No. 24

Guide to Common Mushrooms of British Columbia

By ROBERT J. BANDONI and ADAM F. SZCZAWINSKI

VICTORIA, B.C. SEPTEMBER, 1964

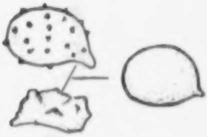

Fig.1
(x 2000)

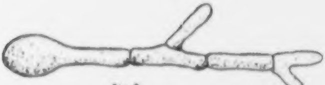

Fig.2

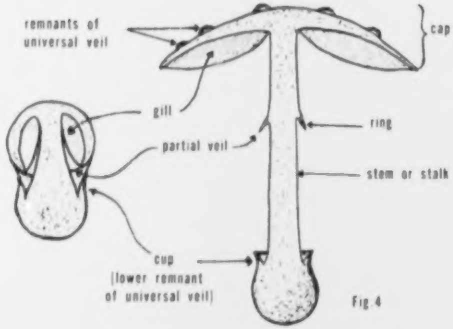
remnants of
universal veil
cap
gill
ring
partial veil
stem or stalk
cup
(lower remnant
of universal veil)

Fig.4

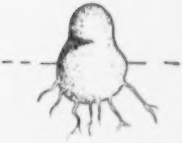

Fig.3

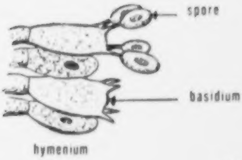
spore
basidium
hymenium

Fig.5

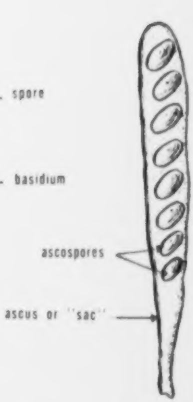
ascospores
ascus or "sac"

Fig.6

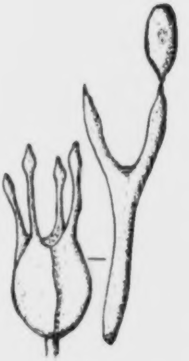

Fig.7

Guide to Common Mushrooms of British Columbia

INTRODUCTION

The organisms referred to as fungi form a large and extremely varied group. Rusts and similar pests of crop plants, moulds found on stored foods, yeasts used in baking and brewing, and the mushrooms are but a few of the types of fungi. It has been estimated that there are more than 200,000 species of fungi, most being inconspicuous or actually microscopic in size. These smaller forms can be studied only with the aid of a microscope. Even the larger mushrooms, puffballs, and similar fungi may require microscopic examination for accurate identification. However, with sufficient study, one can learn to distinguish between many of these larger forms by using the more conspicuous characteristics.

We have included only a fraction of the number of larger fungi known from British Columbia in this handbook. Emphasis has been placed upon the fleshy species, especially mushrooms, since information concerning these is most often requested. The ardent collector will find many species which are not included. For those wishing to identify such species, a list of references is given at the end of the booklet.

The terms " mushroom " and " toadstool " are of uncertain origin and meaning. In some regions, mushroom is applied only to the common meadow mushroom (*Agaricus campestris*) or to its cultivated relative, *Agaricus bisporus*. In other areas, mushroom is used for all edible species and toadstool for those thought to be poisonous. We have used the term " mushroom " for all of the fleshy gill fungi and the related forms and have disregarded the term " toadstool."

Mushroom Life History

Fungi are classified as plants, although they differ from green plants in a number of important respects. Foremost of these dif-

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HANDBOOK No. 24

Guide to Common Mushrooms of British Columbia

by

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1964

PREFACE

The authors wish to express their indebtedness and thanks to all those persons who have in any way helped them during the course of this work. Without the co-operation and kindness of many individuals, the completion of this handbook would have been impossible.

Special mention should be made and credit given to Mrs. D. H. Calverley (Dawson Creek), Dr. J. Walton Groves (Ottawa), Miss E. Lemon (Victoria), Miss M. McKenny (Olympia, Wash.), A. Nicholls (formerly of Victoria), W. Reith (Victoria), Dr. D. E. Stuntz (Seattle, Wash.), C. F. Todd (Bellevue, Wash.), J. E. Underhill (Victoria), F. Waugh (Vancouver), National Museum of Canada (Ottawa), Plant Research Institute (Ottawa), the Government Photographic Branch of the Department of Recreation and Conservation (Victoria), and others who supplied some of the photographs.

The authors are also indebted to Dr. G. Clifford Carl for advice and interest shown in checking and editing the manuscript.

R. J. B.
A. F. S.

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ferences is their inability to manufacture food through the process of photosynthesis. As with animals, they are either directly or indirectly dependent upon green plants for their food supply. Most live on decaying plant or animal remains, but a few are parasites of living plants and animals. Their structure and life histories, too, differ from those of the green plants.

The reproductive units of most fungi are spores (Fig. 1). Fungus spores are very small, frequently less than $^{10}/_{25000}$ of an inch in length. They function in a manner analogous to that of the seeds of flowering plants. Because of their small size, such spores are easily carried about by air currents. Spores of most larger fungi are spread in this manner, but water, insects, or other agents may be involved in dispersal of some. Each fungus fruiting body produces a large number of spores, often in excess of one billion in certain puffballs and bracket fungi. Few of these survive, since dispersal is rather haphazard and does not ensure that spores will light on a spot suitable for growth.

If a spore does fall where there is sufficient moisture, food, and the proper temperature, it will germinate. When this happens (Fig. 2), a small tube-like outgrowth, or hypha, is produced. The hypha increases in length and branches frequently. In this way a mass of hyphæ, called mycelium, is formed. While individual hyphæ are too small to be seen, the mycelial mass may be visible in some cases. However, the mycelium of most large fungi is rarely seen as it is embedded in wood, soil, or similar materials. As hyphæ grow, they secrete chemicals which digest food materials in the surrounding environment. The digestion products are absorbed and utilized by the fungus. This stage in the development of a fungus is comparable to the vegetative growth of a green plant. It is during this stage that the living substance, or protoplasm, is built up. This mycelial or " vegetative " phase may continue indefinitely in many species.

Under suitable conditions of light, temperature, moisture, and probably other factors, the spore-bearing bodies are formed. These most commonly appear during wet periods of the spring or fall. Each fungus mycelium may produce numerous fruiting bodies. The first visible indication that these are being formed is the appearance of compact mycelial knobs or " buttons." The buttons are found at the soil surface or just below it, or on the surface of wood. If a larger button is split vertically, it is seen to be a miniature mushroom (Fig. 3). The buttons expand rapidly, becoming mature mushrooms (Fig. 4).

Each structure performs a definite function in the mature mushroom. The stalk or stem supports the cap and places it at a distance from the soil or wood surface. This allows free circulation of air below the cap in order that spores may be carried away. The stalk also grows in such a manner that the cap is more or less horizontal. The cap bears gills on its undersurface. There they are protected from wetting by rain, which may prevent the release of spores. The gill surfaces are covered by the minute spore-bearing cells called basidia (Fig. 5). In most mushrooms, growth of both the stem and the gills themselves ensures that the gills will be vertically orientated. Mature spores are forcibly shot from the basidia, although the distance they travel horizontally is small. If the gills are exactly vertical, the spores will then fall free of their surfaces.

The button shown in Fig. 3 has two distinct membranes or veils. As the button expands, these are stretched and finally ruptured. Remnants of these membranes are present on mature mushrooms of many species. When the universal veil is torn, wart-like patches of it often remain on the cap and a cup-like portion is sometimes present at the base of the stalk. This cupulate fragment is called a cup or volva. When the partial veil breaks, it usually remains on the stalk and is called a ring or annulus. However, in some cases, it remains on the cap margin rather than on the stalk. Not all of the species of gill fungi have this type of development. In some there is no universal veil, and others lack a partial veil also. Mature fructifications of these species may thus lack either a ring or a cup, or both.

Two features of mushroom development frequently noted are their rapid growth and the appearance of " fairy rings " of the fruiting bodies. When a fungus spore germinates, the mycelium grows out radially in all directions, forming a circular mat. As growth continues, older portions in the centre die and the mat becomes ring-shaped. This mycelium lies just below the soil surface and mushrooms are produced above it (*see* illustration p. 13).

Todd.

Fairy ring (*Clitocybe sudorifica*).

The growth of these fruiting bodies involves transfer of materials from the mycelium and rapid uptake of water. Thus growth of the fruiting body is not directly comparable to that seen in other plants. The term " fairy ring " stems from the old superstition that these rings appeared where fairies had danced. Studies of these rings have shown that they may continue to increase in size for periods of 800 years or more.

Though the life histories of mushrooms and related forms are all similar, their spore-bearing bodies may differ from one another. Differences are found in the form of fructifications produced and in the nature of the spore-bearing surfaces. Some species have basidia borne on teeth or lining the surfaces of tubes rather than on gills. Others differ from one another in shape, in the way that the stem is attached (Fig. 5), and in their consistency. However, the most fundamental differences are microsopic in nature. For example, many of the larger fungi produce their spores in sac-like structures (Fig. 6) rather than on basidia. These are the sac fungi, or Ascomycetes. In addition to these, certain basidium-forming fungi have basidia differing markedly from those of the mushrooms (Fig. 7).

IDENTIFICATION

Because of the large number of species of mushrooms, identification is often very difficult. One should proceed by becoming familiar with the various structures and their names. Examine the mushrooms carefully, at the same time comparing their parts with the figures provided in the introduction and illustrated glossary. We have tried to avoid the use of technical terms where possible and have provided a glossary of those used (p. 173). If, when collecting, one takes several specimens of each species, identification may be facilitated. Do not at first attempt to collect a great number of species. Examination of these is a slow process and is best carried out while the specimens are still fresh. It is a good idea to record the colour, texture, taste and odour, size of the cap and stem, and other pertinent information while the mushrooms are fresh. If these notes are kept with the specimens, identification will still be possible after they have dried.

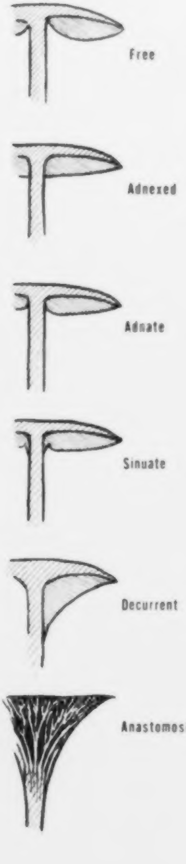
KEYS

Botanical keys are devices designed to assist in rapid identification of plants. The keys in this handbook are composed of pairs or couplets of descriptive statements. To use the key, compare a specimen with each of the statements in the first couplet. Next proceed to the couplet indicated at the end of that statement which best fits the specimen in hand. By continuing to do this, a name eventually is obtained for the specimen. However, the key is only a guide; it does not ensure accurate identification. When a name has been obtained in the key, compare the specimen with the description.

In the keys we have included a number of genera that are not discussed in this handbook. These are marked with an asterisk (*). For information on such genera, the list of reference books (p. 175) may prove helpful.

ILLUSTRATED GLOSSARY

Fig. 8
GILLS



Free

Adnexed

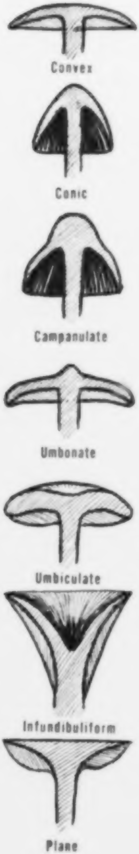
Adnate

Sinuate

Decurrent

Anastomosing

Fig. 9
CAP



Convex

Conic

Campanulate

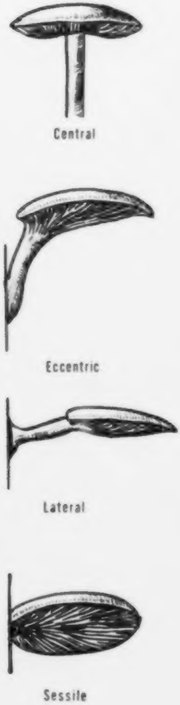
Umbonate

Umbiculate

Infundibuliform

Plane

Fig. 10
STEM ATTACHMENT



Central

Eccentric

Lateral

Sessile

FIELD KEY

CLUB FUNGI (*BASIDIOMYCETES*)

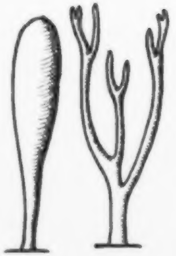
1. Flesh of a tender, jelly-like consistency, trembling, often translucent; fructification shrinking greatly upon drying, but regaining their size, form, and consistency when soaked .... Jelly fungi (*Tremellales*)*

1. Flesh not as above 2

   2. Fruiting body with numerous branches, shrub-like in appearance, or sometimes simply club-shaped 3

   2. Fruiting body not as above 5

3. Ultimate branches rounded, erect, or the structure unbranched and club-like; if tooth-like projections are present at the tips of branches, they are directed upwards .... Coral fungi (*Clavariaceæ*) (Fig. *a*)

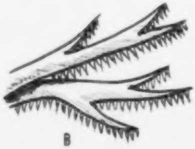


A

3. Ultimate branches flattened, thin, or tooth-like and pendant 4

   4. Branches flattened at tips, thin and broad, erect .... *Thelephoraceæ**

   4. Branches not flattened, the smallest ones tooth-like and directed downwards .... Tooth fungi (*Hydnaceæ*) (Fig. *b*)

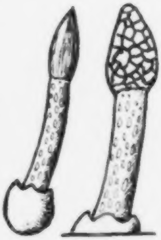


B

5. Fruiting body consisting of a distinct stalk and cap, the stalk centrally attached 6

5. Fruiting body not as above, the stalk lacking or sometimes with a stalk-like portion attached at the edge of the cap, or with the stalk-like base and cap merging into one another 10

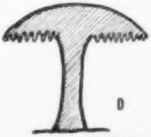
   6. Stem consisting of a soft porous spongy material arising from an egg-like structure which may be buried in soil; cap scarcely exceeding the stalk in diameter, usually greyish to black and with a foul odour .... Stink horns (*Phallales*)* (Fig. *c*)



C

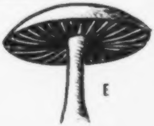
   6. Stem not porous, firm and fleshy in most cases; cap wider than stem and with margins free 7

7. Cap with pendant teeth on underside ....
.... Tooth fungi (*Hydnaceæ*) (Fig. *d*)


D

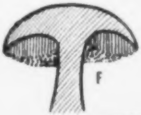
7. Cap with pores or gills 8

8. Gills or gill-like folds on underside of cap .... Gill fungi (*Agaricaceæ* and related forms) (Fig. *e*)

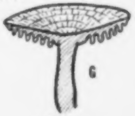

E

8. Gills lacking; pores present 9

9. Cap thick, soft-fleshy; pore layer easily separated from the cap and the individual pores readily separating from one another; frequently discolouring where cut or bruised; mostly on the ground .... Boletes (*Boletaceæ*) (Fig. *f*)

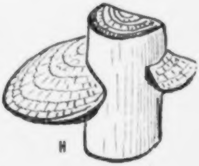

F

9. Cap usually thin, rather tough-fleshy; pore layer adhering to cap and individual tubes not separating from one another; frequently growing on wood, sometimes on soil ....
.... Pore fungi (*Polyporaceæ*) (Fig. *g*)


G

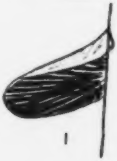
10. Fruiting body fan-shaped, shelf-like, etc., typically attached to wood by the margin or by a contracted stem-like portion of the margin; lower surface with gills, teeth, pores or smooth (Fig. *h*) 11

10. Fruiting body typically growing on the ground, less commonly on badly decayed wood; spores borne inside the fruiting body and enclosed in a firm or papery layer at maturity 14


H

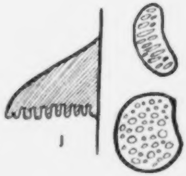
11. Flesh soft; with gills only on underside of cap
.... Gill fungi (*Agaricaceæ* and relatives) (Fig. *i*)

11. Flesh often leathery to corky or woody, tough; lower surface of cap with gills in a few species but these accompanied by pores in most instances 12


I

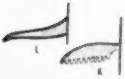
12. Underside of cap with pores or, less often, with gills; if gills are present, they are often irregular in form and usually are accompanied by a few pores, the latter most often found near the margin ....
.... Pore fungi (*Polyporales*) (Fig. *j*)

12. Underside of cap smooth or with teeth 13

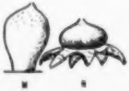

J

13. Teeth present....Tooth fungi (*Hydnaceæ*) (Fig. *k*)

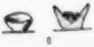
13. Teeth lacking, undersurface smooth .... *Thelephoraceæ** (Fig. *l*)



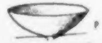
14. Fruiting body with a continuous wall around spore-bearing regions, the wall firm or flexible and papery; spores dry and powdery at maturity, released through a small pore or through irregular cracks in the outer wall .... Puffballs and related forms (Figs. *m*, *n*)

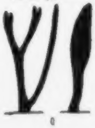


14. Fruiting body as above, but becoming cup or goblet shaped at maturity, the upper portion falling away; spores produced in small lens-shaped structures at bottom of cup .... Bird's nest fungi (Fig. *o*)



SAC FUNGI (*ASCOMYCETES*)

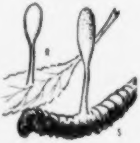




1. Fruiting body cup-shaped, or saucer-shaped, without a stem .... *Peziza*, *Aleuria*, etc. (Fig. *p*)

1. Fruiting body with a distinct stalk-like portion 2

2. Growing on wood, hard, frequently branched, black or with a powdery white layer of spores near tips of branches .... *Xylaria** (Fig. *q*)



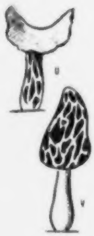
2. Growing on soil, leaves, or insects; unbranched 3

3. On soil 5

3. On buried insect larvæ, insects, or on submerged or very wet leaves and twigs 4

4. Growing on leaves of alder, red cedar, etc., especially those submerged in very shallow water; the spore-bearing region yellow, the slender stipe white and often with its lower end in water *Mitrula** (Fig. *r*)

4. Growing on insects; variously coloured ... . *Cordyceps** (Fig. *s*)



5. Stem and spore-bearing region merging into one another, black, slightly flattened club-shaped; growing among mosses .... *Geoglossum** (Fig. *t*)

5. Cap saddle-shaped to ribbed or pitted with brain-like folds, distinct from the stem-like portion ...... Saddle fungi, morels, etc. (Fig. *u*, *v*)

CLUB FUNGI (*BASIDIOMYCETES*)

GILL FUNGI (AGARICS)

Spore Prints and Spore Colour Groups

Spore prints are necessary in the identification of many gill fungi. When collecting mushrooms, one should note the colour of spore masses on leaves or other materials below the caps. These are sometimes sufficient for identification, but it is necessary to obtain a spore print on paper in most cases. Prints can be obtained by removing a cap and placing it on either paper or cellophane. Pure white paper is best for this purpose. Cover the cap with a water tumbler or saucer to protect it from air currents. In many species, a satisfactory spore print can be obtained within an hour. If no spore print is formed in an 8- to 10-hour period, it is a good indication that the specimen is either immature or too old.

Colour of spores, as seen in the spore prints, is used to separate the gill fungi into five groups. The colour in most instances will be white, ochre, pink, purple-brown, or black. However, many of those grouped together with white-spored forms actually have spores which are pale cream, yellowish, or even pinkish. The use of white paper or cellophane allows one to distinguish between these shades, and this is of value in identification of certain species.

		Page
Spore print pure white to creamy, or pale yellow	Group I	18
Spore print pinkish to salmon or flesh colour	Group II	81
Spore print yellow-brown, cinnamon, dull brown or rusty brown	Group III	85
Spore print chocolate brown, reddish-brown, or purple-brown	Group IV	97
Spore print black	Group V	111

Spore Print Colours—Exceptions.—Colour of spore prints is consistent in many genera. For example, the species of *Amanita, Armillaria,* and others all have white spores. However, in other genera, closely related species may have different coloured spores. This is especially so in some genera—e.g., *Cantharellus, Lactarius,* and *Russula*—where spore print colour ranges from white through cream to pale yellow or even slightly pinkish. One species of *Lepiota* (*L. molybdites*) has dull-green spores and is sometimes placed in a separate genus, *Chlorophyllum*. *Pleurotus sapidus* has lilac-tinted spores, although other species of *Pleurotus* are white-spored. Several species of *Tricholoma* have spores of a dingy flesh colour. The genus *Psathyrella*, as now treated, includes species with pink, brick-red, chocolate-brown, or black spores.

Descriptions and illustrations of less than 100 species are included in this booklet. It should be noted that there may be as many as 2,000 different fleshy fungi and mushrooms in British Columbia. Thus, this booklet has obvious limitations and one should not " force " specimens to fit a particular description in it.

GROUP 1
(SPORES WHITE, CREAM, PALE YELLOW)

KEY TO GENERA

1. Gills shallow, ridge-like, thick, frequently branching and anastomosing .... *Cantharellus*
1. Gills thin, plate-like, occasionally or not at all branched 2
  2. Edges of gills evenly toothed, cap with a stalk or sessile .... *Lentinus*
  2. Edges of gills even, cap with a stalk or sessile 3
3. Gills with a slight lustre, waxy in appearance and in texture, thick, triangular in cross-section 4
3. Gills without a lustre, fleshy, thin in cross-section 5
4. Cap or stem or both often viscid; stem fleshy (spores smooth) .... *Hygrophorus*
4. Cap moist but not viscid; stem fibrous in appearance (spores spiny) .... *Laccaria*
  5. Flesh of cap typically fragile, granular, crumbling readily in mature fruiting bodies; stem of similar texture, stout and inflexible, breaking easily 6
  5. Flesh rather fibrous in texture, splitting readily in one plane only or not at all, not crumbling 7
6. Milky juice (latex) exuded when cap or gills are cut or broken .... *Lactarius*
6. Milky latex lacking .... *Russula*
  7. Stem present, centrally placed 8
  7. Stem lacking or, if present, eccentric or lateral in attachment 18
8. Ring or cup, or both, present 9
8. Ring and cup absent 12
  9. With both cup and ring .... *Amanita*
  9. With a ring or cup but not both 10
10. Ring lacking, cup present .... *Amanitopsis*
10. Ring present, cup lacking 11

11. Gills free from stem; stem separating readily and cleanly from cap .... *Lepiota*
11. Gills attached to stem or running down it .... *Armillaria*
12. Stem fleshy, confluent with cap, typically larger than ¼ inch in diameter 13
12. Stem horny or cartilaginous to wiry, of a different texture than cap, rarely more than ¼ inch in diameter and often less than ⅛ inch 14
13. Gills partially attached (sinuate) to attached and notched (adnexed) .... *Tricholoma*
13. Gills most commonly running down the stem or simply attached (adnate) in some species .... *Clitocybe*
14. Cap and stem pliant, withering on drying but reviving when moistened; gills attached or free, or attached to a collar (spores non-amyloid) .... *Marasmius*
14. Cap not reviving after drying (a few exceptions occur in *Collybia*) 15
15. Gills running down stem 16
15. Gills partially attached (adnexed) or attached (adnate) 17
16. Cap convex when young; stem dark brownish-black, horny (spores amyloid) .... *Xeromphalina*
16. Cap strongly incurved or inrolled when young; stem cartilaginous, variously coloured (spores non-amyloid) .... *Omphalina*
17. Stalk tubular, usually brittle; mature caps conical or bell-shaped .... *Mycena*
17. Stalk rather tough; margin of young cap inrolled, mature caps flat or convex .... *Collybia*
18. Fruiting body soft to firm, fleshy, not reviving when moistened *Pleurotus*
18. Fruiting body tough, leathery to corky in texture when moist, drying brittle and reviving when moistened 19
19. Gills thin, plate-like, not split longitudinally; cap thick, firm when moist, drying corky .... *Lenzites**
19. Gills split longitudinally; cap thin, leathery, very flexible when moist, drying brittle .... *Schizophyllum**

GENUS *AMANITA*

The amanitas are an extremely important group of mushrooms because of the number of poisonous forms included. It is essential that anyone collecting mushrooms for food should be thoroughly familiar with the characteristics of this group. Three of the species included in this genus are responsible for most of the fatalities caused by mushroom poisoning, and a number of others cause serious illness or occasional deaths.

Most of the amanitas are very beautiful mushrooms; there is nothing in the taste, odour, or colour which readily separates the poisonous species from the edible. The following characteristics are those which distinguish this genus from others:—

(1) Both a partial veil and a universal veil are present in the button stage. These can be seen if the button is split lengthwise.

(2) As the button expands, both veils break. Remnants of the outer veil often (but not always) remain on the cap as warts or flattened membranous patches. At the base of the stem, a cup-like volva or veil fragment remains. When the inner veil (partial veil) breaks, it remains on the stem as a ring. The ring and the cup usually are conspicuous in most of our amanitas, but the ring is sometimes poorly formed or delicate and may disappear. The cup of *Amanita muscaria* and closely related species does not usually have a free lip but consists of a series of ridges running around the base of the stem. Only the amanitas have both a ring and a cup on the stem; for this reason, these two features should always be checked carefully.

(3) In addition to the above, the amanitas have gills that are white or pale-cream coloured, and they are free from the stem or just reach it. The stem separates cleanly and rather easily from the cap. The spore print is white.

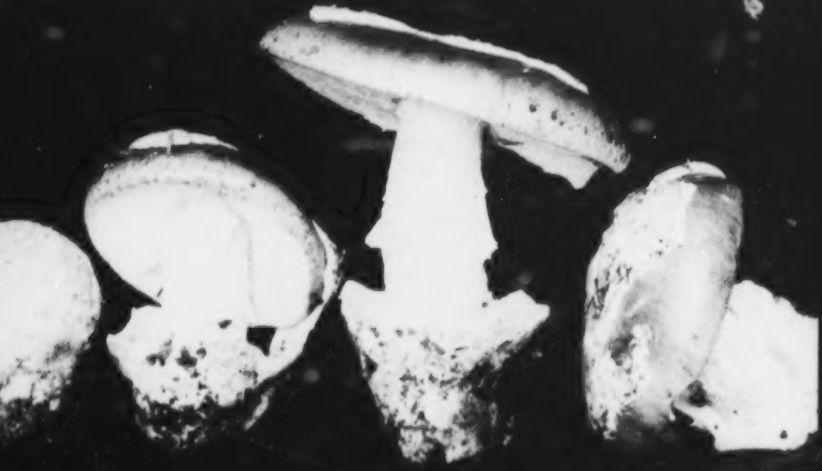
Amanita calyptroderma **White-veiled Amanita**

DESCRIPTION.—*Cap:* Up to 8 (–12) inches broad, rounded when young, becoming nearly plane, fleshy, smooth, viscid, creamy yellow to buff or yellow-orange, lined on the margin, typically capped by one or more large patches of the membranous veil. *Gills:* Free from the stem at maturity, white to pale yellowish, broad, crowded. *Flesh:* White, thick and soft. *Stem:* Up to 8 inches long and 1 inch thick, white or creamy, the base with a thick cup. *Ring:* Membranous, yellowish. *Spore Print:* White.

HABITAT.—Scattered or in groups on ground in mixed forest or on grassy edges of the forest.

SEASON.—Fall.

EDIBILITY.—Edible, but see Comments.



Stuntz.

White-veiled amanita (*Amanita calyptroderma*).

COMMENTS. — The white-veiled amanita is seasonally abundant on southern Vancouver Island, where it occurs in mixed Garry oak-arbutus-Douglas fir forest. It is distinguished from other amanitas by the thick membranaceous cup which surrounds the base of the stem and by the large patches of veil remnants on the cap. It is edible and considered excellent by some. However, because of the danger of misidentification, we do not recommend it.

Amanita muscaria **Fly Agaric, Fly Amanita**

DESCRIPTION.—*Cap:* Up to 12 inches broad, hemispheric at first, becoming expanded and convex, finally plane or with slightly upturned margins, fleshy, brilliant scarlet or orange, fading to yellowish, viscid when moist, marked with minute lines on the margin and usually covered by whitish or creamy warts. *Gills:* Reaching the stem but free from it, white to pale yellowish, close. *Flesh:* White or creamy, yellow under the peel, without distinctive odour. *Stem:* Up to 8 inches long and 1 inch thick, enlarged at the base and tapering upward, stuffed, then hollow, white to creamy or yellowish, smooth or slightly floccose near the top. *Cup:* Usually visible only as a series of ridges forming concentric rings on the swollen base of the stem, sometimes with a single ring forming a shallow cup. *Ring:* Conspicuous, membranous, pendulant. *Spore Print:* White.

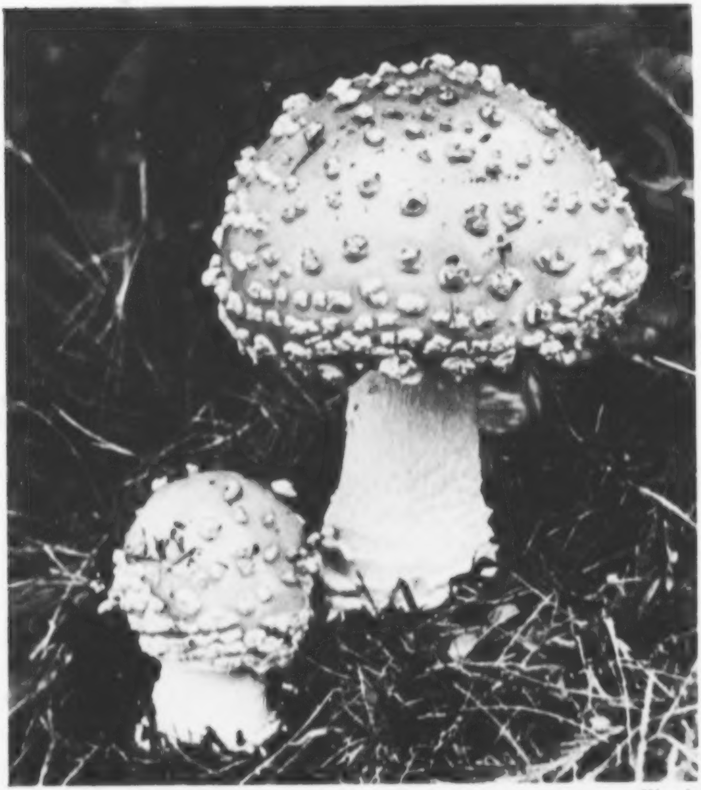
HABITAT.—Solitary or in groups on ground in coniferous or mixed forest, grassy edges of the forest, open shrublands, along grassy ditches or on lawns under trees.

SEASON.—Summer and fall.

EDIBILITY.—POISONOUS.

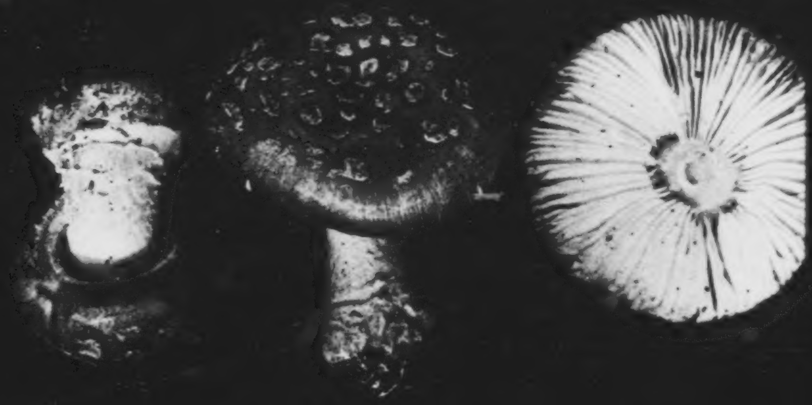
COMMENTS.—One of our most striking mushrooooms. The name fly agaric or fly amanita is based on the use of this mushroom for killing houseflies. The junior author recalls the use of fly agaric in Eastern and Central Europe by peasants. Small pieces of this mushroom were mixed with water, milk, or other liquids and placed in areas frequented by houseflies. With the addition of honey or sugar, its attraction to flies is increased and they are killed by consuming it.

Dr. Andrija Puharich, in his book " The Sacred Mushroom " discusses the properties of fly agaric and its effects on human beings.



Waugh.

Fly agaric (*Amanita muscaria*).



B.C. Govt. photo.

Panther agaric (*Amanita pantherina*).

Amanita pantherina **Panther Agaric, Panther Amanita**

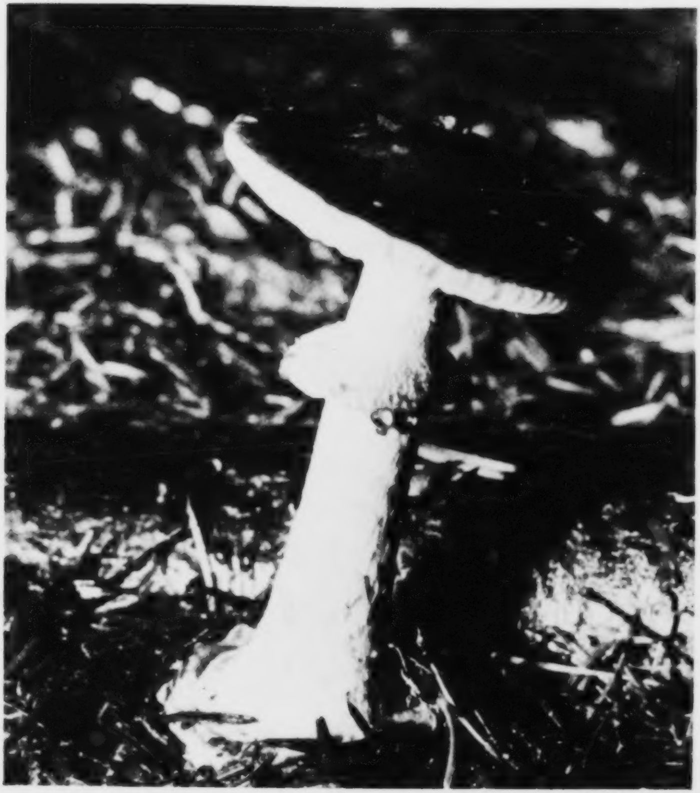
DESCRIPTION.—*Cap:* Up to 6 (–12) inches across, rounded at first, becoming flat, fleshy, viscid when moist, pale tan to pale yellowish-brown or dark brown, darkest at the centre, marked with minute lines at the margin, covered by whitish or cream-coloured warts. *Gills:* Free from the stem, white, close. *Flesh:* White or whitish, without distinctive taste or odour. *Stem:* Up to 5 inches long and 1 inch thick, enlarged at the base, stuffed, white, silky shining above the ring and somewhat fibrillose below. *Cup:* Adhering to the stem and forming a narrow free collar. *Ring:* Membranous, cottony above and fibrillose below. *Spore Print:* White.

HABITAT.—Solitary or in groups on ground in open coniferous forest or on lawns or open places in the vicinity of mature Douglas fir. Especially abundant on Vancouver Island near Victoria and on the east coast of Vancouver Island.

SEASON.—From April to late fall, whenever there is sufficient moisture. Occasionally occurring during mild winters also.

EDIBILITY.—POISONOUS.

COMMENTS.—This mushroom derives its name, panther agaric, from the panther-like spots or warts on the cap. It is the most common cause of mushroom poisoning in the Pacific Northwest. A number of cases, including a recent one in Victoria, involved children who found the panther amanita and ate it raw. The danger of poisoning is great as the species frequently occurs on lawns and in woods of populated areas.



Bandoni.

Grey-brown amanita (*Amanita porphyria*).

Amanita porphyria **Grey-brown Amanita**

DESCRIPTION.—*Cap:* Up to 4 inches broad, convex at first, expanding to nearly plane or with the margin slightly elevated, fleshy, smooth, slightly sticky when moist, a few patches of the veil adhering to the surface grey-brown or pale brown, frequently with a faint purplish cast. *Gills:* Free from stem, white to creamy white, close, unequal in length. *Flesh:* White, without noticeable odour. *Stem:* Up to 5 inches long, about ½ inch thick, cylindric or tapering slightly upward, swollen at base, whitish and usually with a jagged grey pattern on the surface. *Cup:* Membranous, with a free collar, greyish. *Ring:* Membranous, soft, pale ashy-grey. *Spore Print:* White.

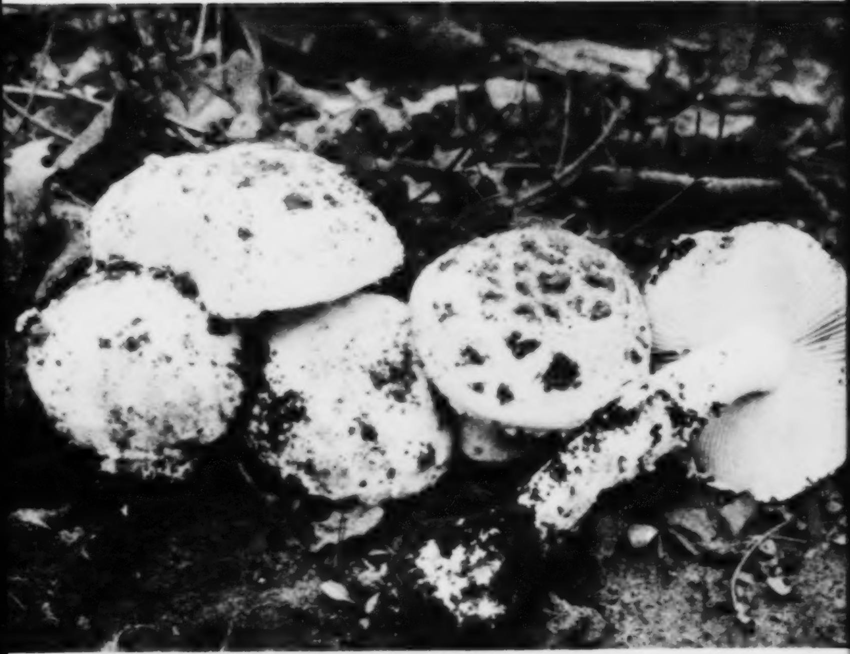
HABITAT.—Scattered or in small groups on ground in coniferous forest, especially along trails or where forest is not dense.

SEASON.—Summer to late fall.

EDIBILITY.—Suspected.

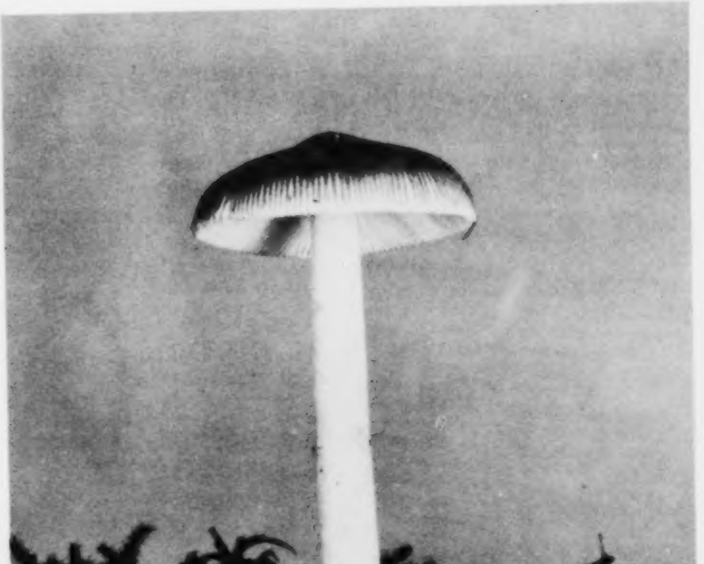
COMMENTS.—The hairy remnants of the veil on the cap and the streaky grey pattern found on the stem are good field characteristics. This is the most commonly collected *Amanita* on the lower mainland, and it is sometimes mistaken for one of the *Amanita phalloides* group. However, *A. phalloides* has a greenish cap and *A. virosa* and *A. verna* are generally pure white.

A. silvicola occasionally found in British Columbia, particularly in the coastal coniferous forests of Vancouver Island and the mainland, is reported by McKenny (1962) as common in the Puget Sound area. This *Amanita* has a white dry cap with warts on its surface, white gills, a short white stem enlarged at the base, and the universal veil soft and fragile; the cup is often inconspicuous.



Todd.

Woodland amanita (*Amanita silvicola*).


Todd.

Sheathed amanitopsis (*Amanitopsis vaginata*).

Amanitopsis vaginata **Sheathed Amanitopsis, Sheathed Agaric**

SYNONYM.—*Amanita vaginata.*

DESCRIPTION.—*Cap:* Up to 5 inches across, ovate at first, then campanulate finally becoming plane, often umbonate, fleshy, glabrous, with prominent lines on the margin, occasionally with fragments of the veil, colour of the cap variable, mostly white to tawny or grey. *Gills:* Free from the stem, white, broad. *Flesh:* Thin, white, without any particular taste or odour. *Stem:* Up to 6 inches long and ½ inch thick, white, slender, becoming hollow, without ring, with the base deep in the soil and ensheathed by the cup. *Spore Print:* White.

HABITAT.—Solitary or scattered on ground, in humus of moist coniferous forest or on the edges of shady woods.

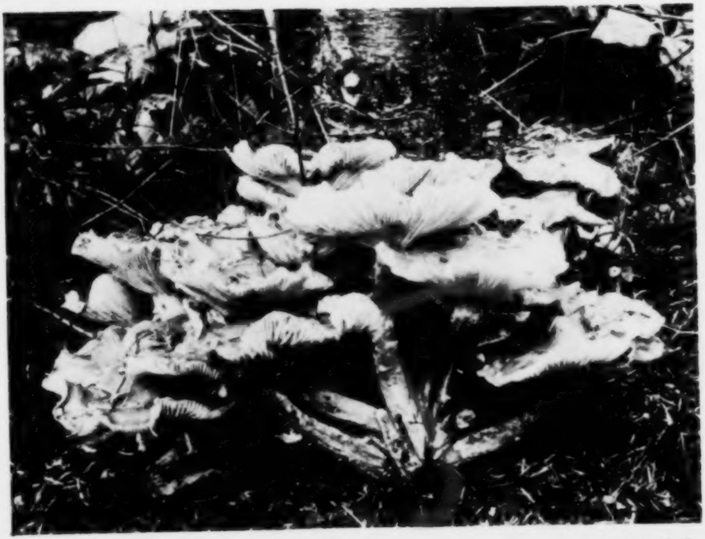
SEASON.—Fall. Sometimes late in spring.

EDIBILITY.—Edible but not recommended because of possible confusion with poisonous species of the *Amanitas.*

COMMENTS.—*Amanitopsis* is very similar in habit to species of *Amanita,* from which it is distinguished by the absence of a ring. Some mycologists include mushrooms of this kind in the genus *Amanita.* The sheathed amanitopsis is a very attractive mushroom and is common in British Columbia. It is an edible species, but one could easily confuse it with the poisonous *Amanitas.*

Armillaria mellea **Honey Mushroom, Honey Agaric, Shoe-string Agaric**

DESCRIPTION.—*Cap:* Up to 4 inches broad, hemispherical at first becoming umbonate with an inrolled margin, finally plane or with raised margins, fleshy, yellowish-brown to dark brown with minute brown or blackish scales on the surface. *Gills:* Running down the stem, whitish to cream coloured, rusty-spotted in older specimens and drying brownish, close, narrow. *Flesh:* Whitish to pale rust colour, firm. *Stem:* Up to 6 inches long ½–¾ inch thick, cylindric with a slightly swollen base, tan or brownish, solid then hollow, smooth or slightly scaly below the ring, pliant. *Ring:* Small, cottony. *Spore Print*: White.



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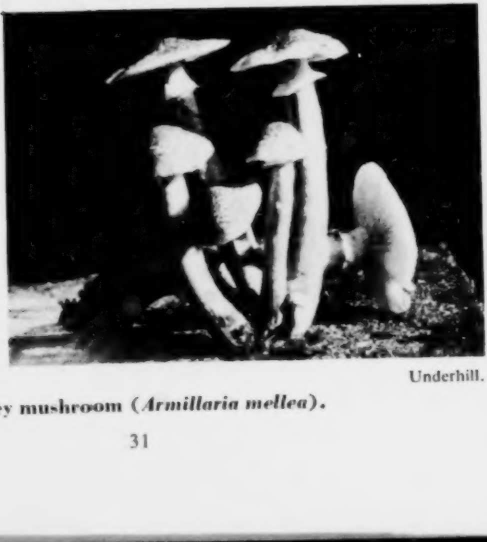


Underhill.

Honey mushroom (*Armillaria mellea*).

HABITAT.—In clusters on trunks or at the bases of living or partly decomposed dead trees. Often growing on buried wood.

SEASON.—Late summer and fall.

EDIBILITY.—Edible and choice.

COMMENTS.—Widely distributed and one of our most abundant mushrooms. The honey agaric parasitizes and kills many kinds of plants and lives on the dead host. Black string-like structures, called rhizomorphs, are formed under the bark of trees killed by this fungus.

The honey agaric is widely used as food, having a strong but excellent mushroomy flavour. The young caps are suitable for pickling in vinegar and for drying. In Europe many people collect this species in large quantities for winter use. In our opinion *Armillaria mellea* is one of the best of the edible species.

Armillaria ponderosa **Pine Mushroom**

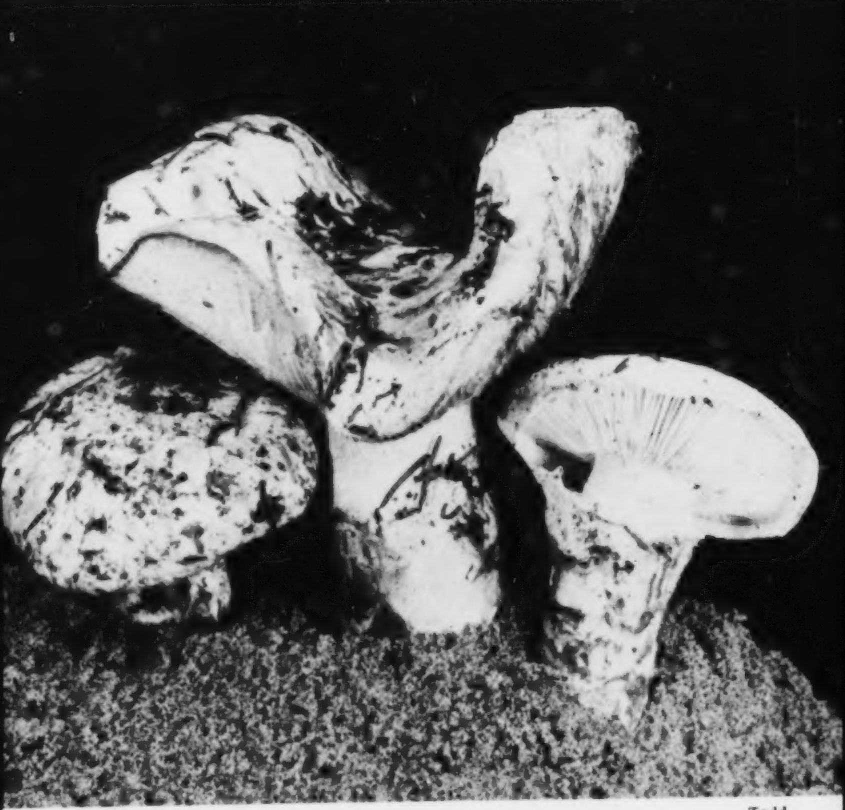
DESCRIPTION.—*Cap:* Up to 8 inches broad, hemispherical becoming flat, fleshy, slightly viscid, white when young becoming brownish, smooth or covered with delicate brownish scales at maturity. *Gills:* Partially attached to the stem, narrow, crowded, whitish, changing to pinkish or brownish in age or upon bruising. *Flesh:* Very firm, white to creamy white, of mild taste and with an aromatic odour. *Stem:* Up to 6 inches long, up to 1½ inches thick at the top and tapering to a pointed base, white, firm, solid, slightly viscid. *Ring:* Thick, soft. *Spore Print:* White.

HABITAT.—Solitary or in small groups on ground; associated with conifers, particularly pines.

SEASON.—Fall.

EDIBILITY.—Edible and highly valued by some.

COMMENTS. — The pine mushroom is common on the Gulf Islands and Vancouver Island, where it is found in open pine parklands or on the west coast of Vancouver Island among thickets of evergreen huckleberries. It occurs in the Vancouver region only at higher elevations.



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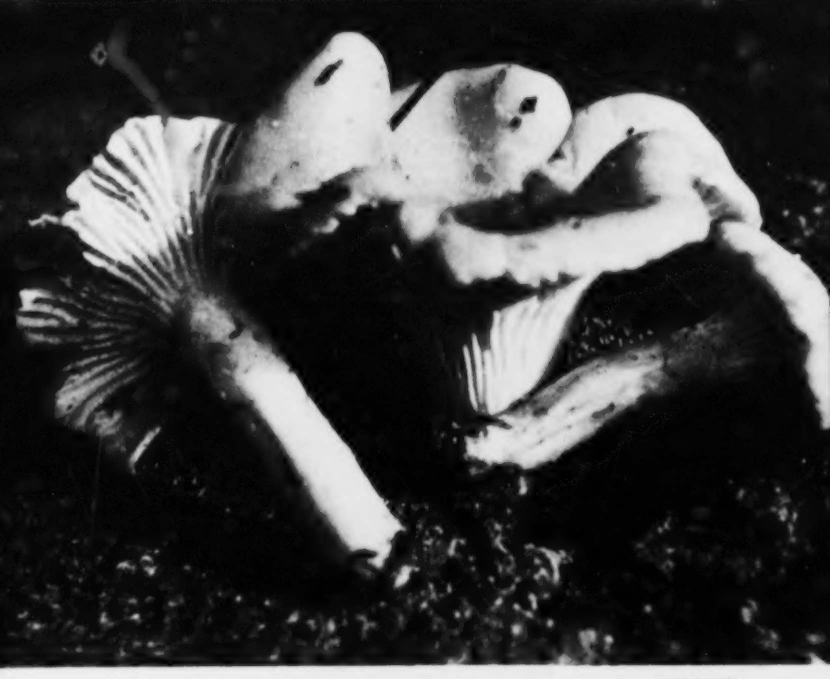
Pine mushroom (*Armillaria ponderosa*).



Underhill.

Chanterelle (*Chantharellus cibarius*).

34

Cantharellus cibarius **Chanterelle**

Description.—*Cap:* Up to 4 inches broad, at first rounded, becoming expanded and often depressed in the centre, with the margin sometimes lobed and undulate, fleshy, firm, smooth, pale yellow to bright egg-yellow or sometimes orange tinted, fading in age. *Gills:* Not prominent, fold-like, shallow, blunt on the edge, forking and anastomosing, running down the stem. *Flesh:* White to yellowish, slightly peppery, with no distinctive odour. *Stem:* Up to 4 inches long, ½–1 inch thick, solid, the same colour as cap or slightly paler. *Spore Print:* Faintly ochraceous.

Habitat.—Scattered or in groups on ground in shady coniferous forest rich in raw humus, often covered by loose litter. In summer the fruiting bodies are small and occur most abundantly along trails.

Season.—Summer and fall.

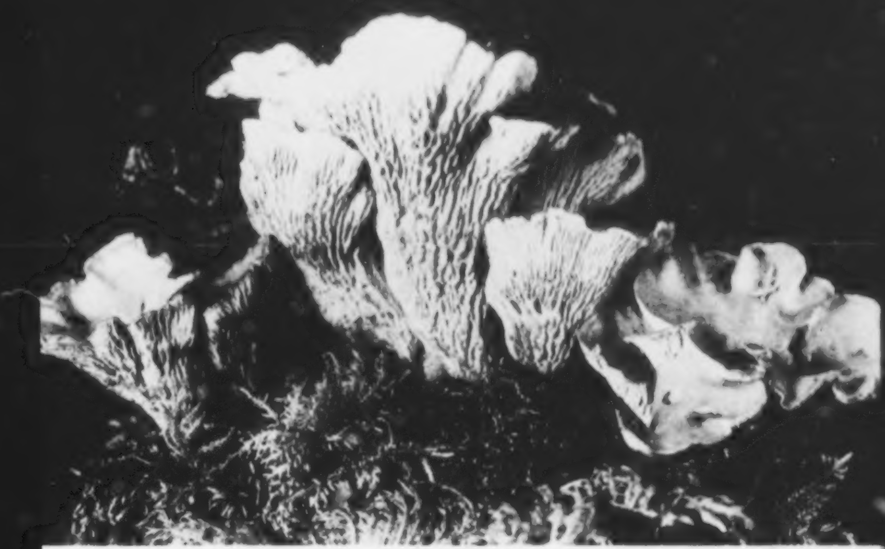
Edibility.—Excellent mushroom, highly prized as a food.

Comments.—The egg-yellow colour and thick fold-like gills make this mushroom easy to recognize. *C. cibarius* might be confused with the orange clitocybe (*Clitocybe aurantiaca*), which it resembles to some extent. However, the orange clitocybe has thin crowded gills, a softer consistency, and a white spore print.

The chanterelle is very valuable commercially as it often grows in quantity and easily withstands transportation. The slight peppery taste disappears upon cooking. Due to the firmness of its flesh, it requires a long cooking period, especially if the specimens are not young. One can find many recipes for preparing the chanterelle, especially in Europe, where this mushroom is highly regarded.

Cantharellus clavatus **Clustered Chanterelle**

Description.—*Cap:* In dense clusters, at first club-shaped, becoming broadly funnel-shaped or with only one side developing, usually with irregular and lobed margins, up to 4 inches broad, fleshy, firm, olive-brown to dull brown, purplish-tinged on the margin (the purple being more pronounced in younger stages). *Gills:* Ridge-like, long, narrow, and forking, running to the base of the stem and often scarcely marked. *Flesh:* Whitish to greyish,



Nicholls.

Clustered chanterelle (*Cantharellus clavatus*).

rather tough; taste mild. *Stem:* Usually less than 2 inches long and ¾ inch thick, purple or olive-brown, solid, expanding into a cap upwards. *Spore Print:* Ochre.

HABITAT.—In large clusters on soil rich in raw humus in shady, moist, mature conifer forest. Common on the west coast of Vancouver Island.

EDIBILITY.—Edible and choice.

COMMENTS.—A very showy mushroom and one which is easy to identify. Sometimes it is called pigs' ears because of its unusual form.

Cantharellus floccosus — **Shaggy Chanterelle, Woolly Chanterelle**

DESCRIPTION.—*Cap:* Up to 4 inches or more broad, deeply vase or funnel-shaped, fleshy, firm, creamy-yellow when young, turning orange-red when mature, upper surface covered by reddish woolly scales giving it a shaggy appearance. *Gills:* Narrow, shallow, extending far down the stem, creamy-white to buff in colour and repeatedly forked. *Flesh:* Whitish, without any particular taste or odour. *Stem:* Up to 2 inches long, 1 inch thick, stout, firm, glabrous, creamy, often whitish at the base, expanding into the funnel-shaped cap. *Spore Print:* Ochre.

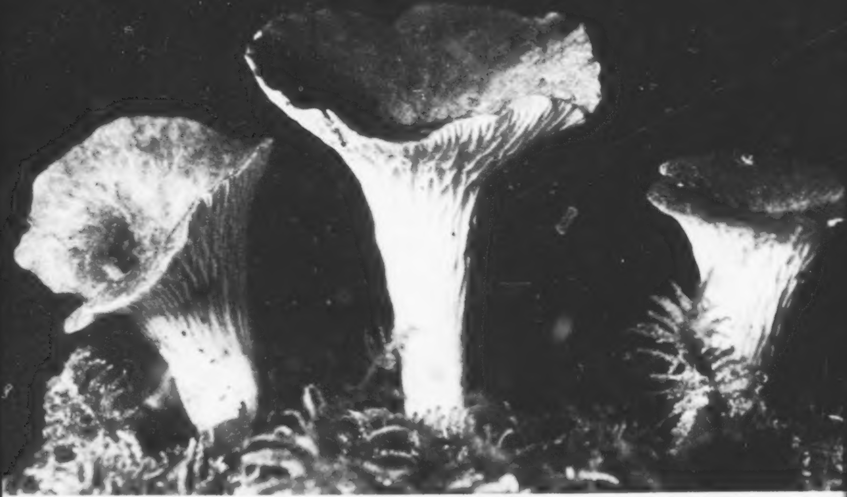
HABITAT.—Singly or in small groups on ground rich in humus in mature, cool and wet coniferous or mixed forest.

SEASON.—Late summer to fall.

EDIBILITY.—Edible but may cause indigestion in some individuals.

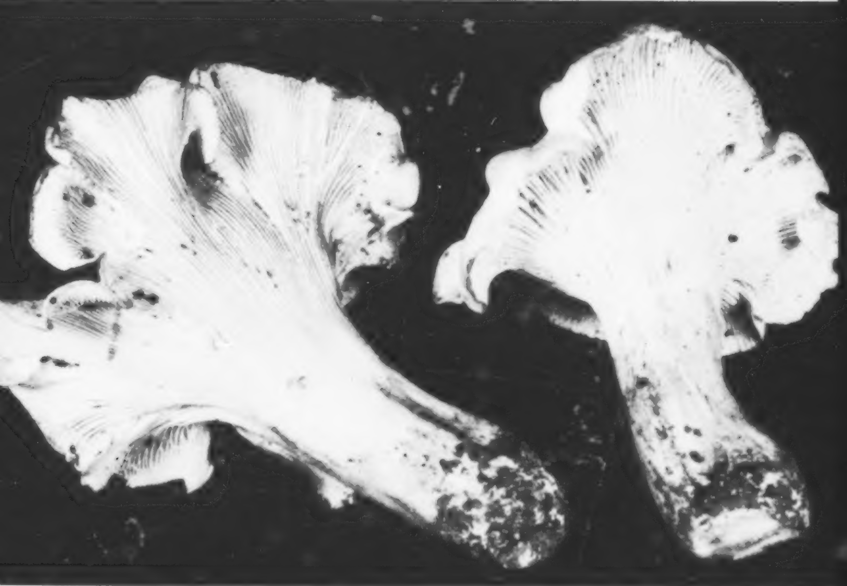
COMMENTS.—This large orange-red, vase-shaped mushroom is easy to identify and to separate from other chanterelles. As it is reported to cause indigestion in some individuals, it should not be eaten in large quantities when tried for the first time.

Specimens of *Russula* or *Lactarius* parasitized by the sac fungus *Hypomyces lactifluorum* often resemble the woolly chanterelle in general form and in having low ridge-like gills. This parasite produces a thin layer of very tiny fruiting bodies on the gill and stem surfaces of the host. It is orange or reddish-orange in colour.



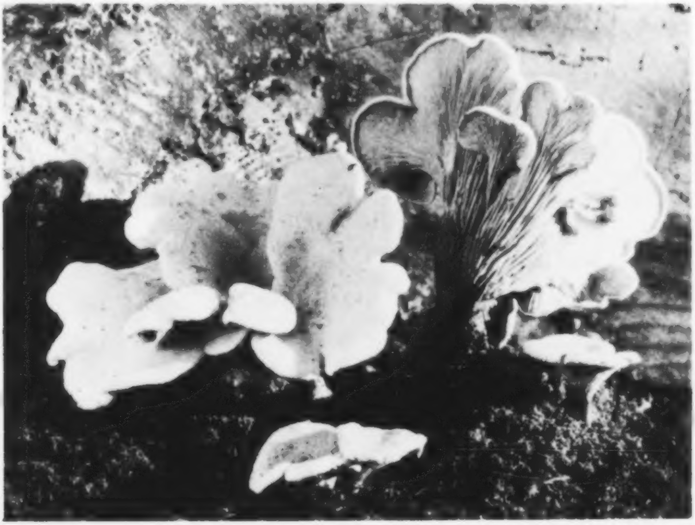
Nicholls.

Shaggy chanterelle (*Cantharellus floccosus*).



B.C. Govt. photo.

White chanterelle (*Cantharellus subalbidus*).



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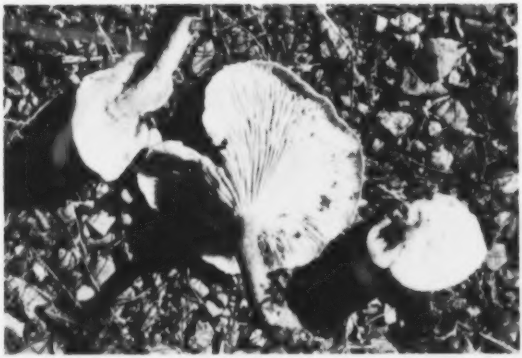


Underhill.

Orange clitocybe (*Clitocybe aurantiaca*).

Cantharellus subalbidus **White Chanterelle**

The white chanterelle is very similar to the yellow chanterelle (*Cantharellus cibarius*), the most striking difference being its whitish colour and the colour of the spores which are also white. Specimens of white chanterelle are frequently larger than those of *C. cibarius*. They grow most abundantly in open coniferous forest with salal and Oregon grape in the understory and are covered by a thick layer of litter or humus. This is true on Vancouver Island, where it is always most difficult to locate the first specimens. The white chanterelle has a long season, sometimes persisting through mild winters on Vancouver Island. They are as delicious as the yellow chanterelle, but may require longer cooking.

Clitocybe aurantiaca **Orange Clitocybe, False Chanterelle**

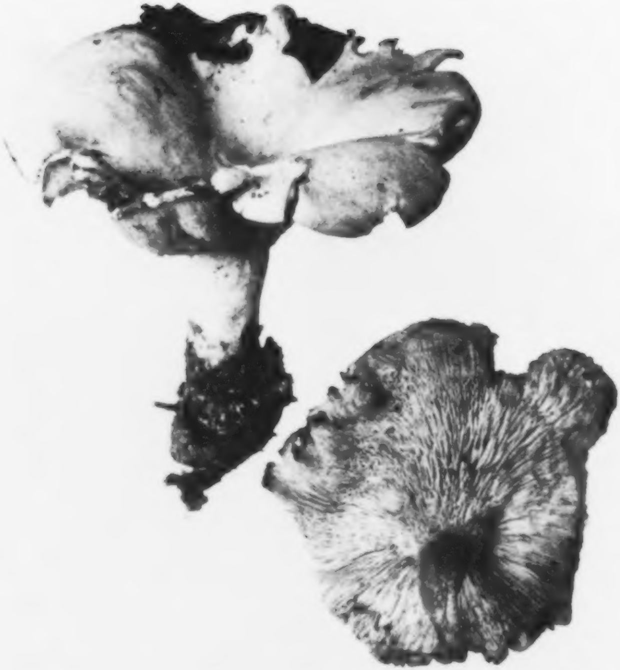
DESCRIPTION.—*Cap:* Up to 3 inches broad, at first flat, the margin incurved, sometimes becoming funnel-shaped in age, with margin curved down or elevated and wavy, soft, the surface smooth or velvety; from buff to bright orange, darker and often brownish at the centre. *Gills:* Extending down the stem, thin, crowded and frequently forked, usually brighter than the cap surface, pale to bright orange. *Flesh:* Soft and spongy, yellowish or pale orange, having rather a mild taste and odour. *Stem:* Up to 4 inches long, ¼–½ inch thick, smooth or finely tomentose, yellowish, orange or brownish, cylindric or slightly tapering upwards, solid or sometimes hollow. *Spore Print:* White.

HABITAT.—Scattered or usually in groups on the ground, on humus, or on decayed wood in shady coniferous or mixed forest.

SEASON.—Summer to fall.

EDIBILITY.—Questioned. Some maintain that it is poisonous, while others say it is harmless. We therefore do not recommend this species. The rather cottony texture would not indicate a good edible form.

COMMENTS.—The orange clitocybe is extremely variable in colour, but is usually pale to orange. Occasionally one finds specimens which are pale buff or almost white. While once placed in the genus *Cantharellus*, it does not have the low ridge-like gills characteristic of that group.



National Museum of Canada.

Giant clitocybe (*Clitocybe gigantea*).

Clitocybe gigantea **Giant Clitocybe**

Synonym.—*Leucopaxillus giganteus.*

Description.—*Cap:* Up to 10 inches broad, occasionally larger, at first rounded and with an inrolled margin, becoming flat, then centrally depressed, finally funnel-shaped, fleshy, smooth, dry, ivory-white to buff when young, tan when old. *Gills:* Running down the stem, white to pale tan, darkening with age, crowded, occasionally forked, united by veins near the stem. *Flesh:* White, thin, without any distinctive taste or odour. *Stem:* Short, up to 3 inches long and 2 inches thick, firm, glabrous, tan above, whitish below, tapering slightly downwards or cylindric, often swollen at the base. *Spore Print:* White.

Habitat.—Usually in groups on ground in coniferous woods and open places.

Season.—Late summer and fall.

Edibility.—Edible.

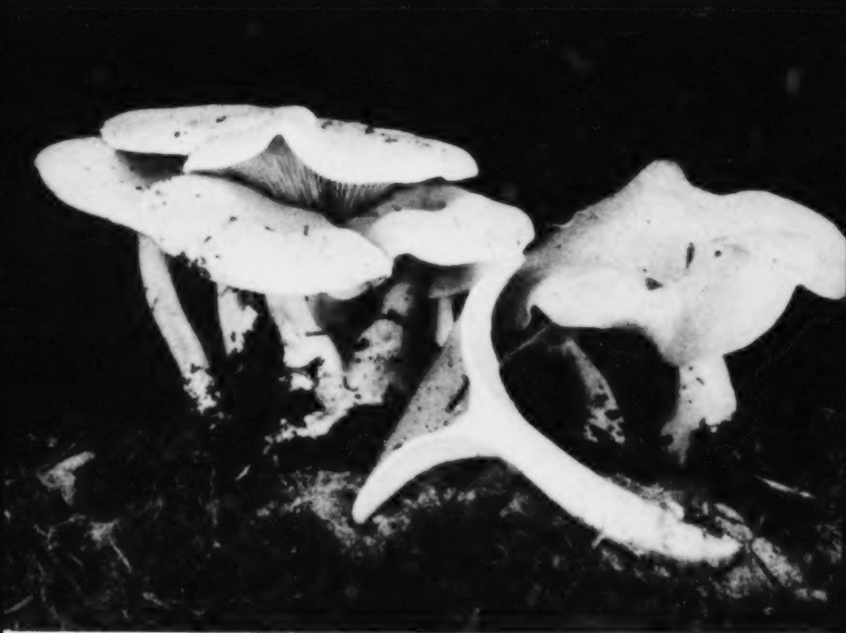
Comments.—A very large mushroom which occurs occasionally in profusion in our woods, being especially abundant in the fall. It is edible but of inferior quality since it is rather tough.

Clitocybe odora **Fragrant Clitocybe, Anise-scented Clitocybe**

Description.—*Cap:* Up to 3 inches broad, convex at first, then expanded and irregularly upturned and wavy at the margin, fleshy, smooth, varying in colour from whitish to bluish or greyish-green, fading with age or on drying; the bluish colour is much more prominent in wet weather. *Gills:* Attached and sometimes extending down stem a short distance, thin, close, cream coloured to faintly greenish or bluish-green. *Flesh:* White or pale greenish with characteristic pleasant odour resembling that of anise, taste mild. *Stem:* Up to 3 inches long and ¼ inch thick, whitish or bluish-green, paler than cap, cylindrical, elastic, solid at first, becoming hollow. *Spore Print:* White.

Habitat.—Scattered or in small groups on ground, often covered by coniferous litter or raw humus in shady, mature coniferous or mixed forest.

Season.—Late summer to fall.



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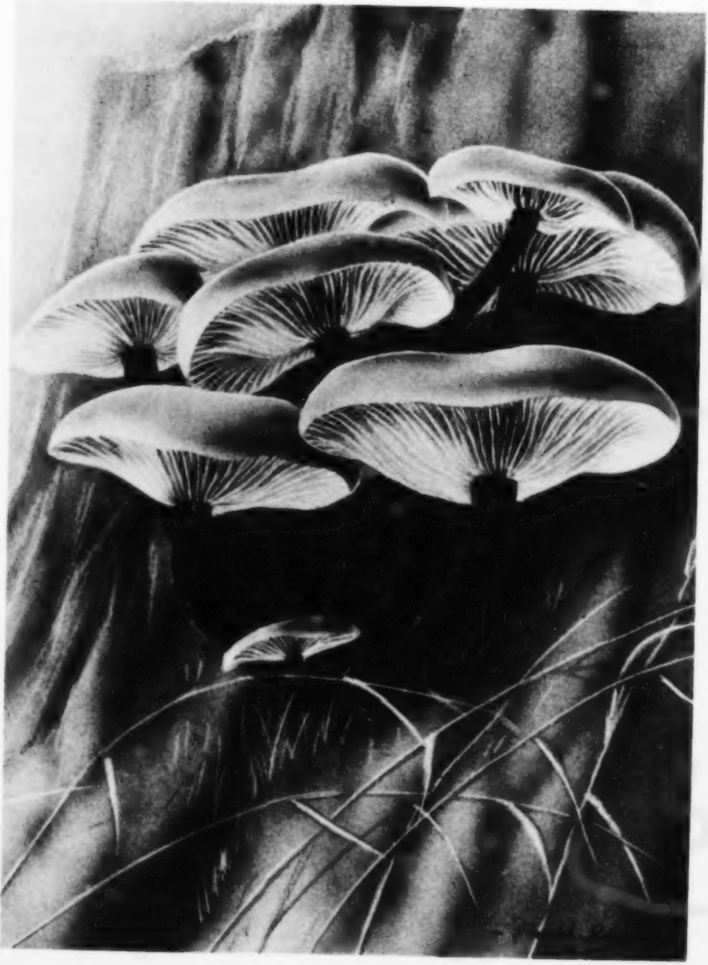
Fragrant clitocybe (*Clitocybe odora*).



Beebe.

Velvet-stem collybia (*Collybia velutipes*).

EDIBILITY.—Edible.

COMMENTS.—Easily recognized by its characteristic fragrance and bluish colour. This is a very unusual mushroom, and its unexpected features make it especially attractive to the mushroom-hunter. It can be mixed with other species if the odour makes it too overpowering for one's taste. We specially recommend this one as worth while trying.

Collybia velutipes **Velvet-stem Collybia**

DESCRIPTION.—*Cap:* Up to 2½ inches broad, rounded to nearly plane, sometimes upturned in age, smooth, viscid when moist, yellowish-brown to reddish-brown at the centre, paler toward the margin. *Gills:* Partially attached, rather distant, of unequal lengths, tawny or pale yellowish. Flesh white or with a yellow or pink tint; the taste mild and without characteristic odour. *Stem:* Up to 3 inches long, about ¼ inch thick, tough, solid or hollow, densely velvety-hairy, yellowish when young, becoming dark brown or blackish from base upward with age. *Spore Print:* White.

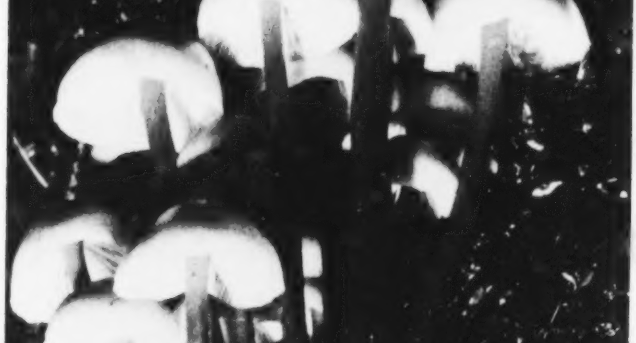
HABITAT.—In small clusters on dead standing trees or stumps, usually of alder or elder in this region.

SEASON.—Late fall or winter, sometimes early spring.

EDIBILITY.—Edible.

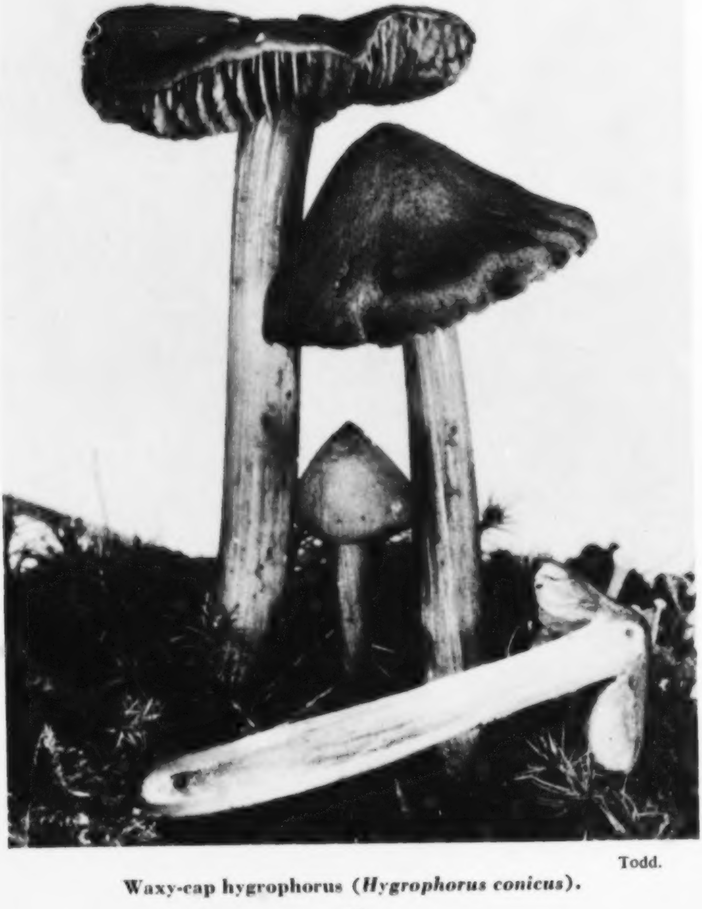
COMMENTS.—This species can be recognized by its velvety stem, viscid brownish or yellowish cap, and by the season in which it occurs. The velvet-stem collybia is most abundant in coastal British Columbia when other mushrooms have largely disappeared. Because this mushroom is cold-tolerant, alternately freezing and thawing and remaining alive, Smith (1958) suggests that it might be possible to preserve it by quick freezing.

Another species of *Collybia* common in coastal British Columbia is the bunched collybia (*C. acervata*). It grows on very decayed logs or where there is deep humus and is usually found in dense clusters. The long stems in a cluster are bound together for a part of their length (that part in the humus or in decayed wood). The cap and stem are a dull pale brown (pecan brown), sometimes purplish-brown. It is edible, but frequently has a bitter taste after cooking.



Bandoni.

Bunched collybia (*Collybia acervata*).



Todd.

Waxy-cap hygrophorus (*Hygrophorus conicus*).

Hygrophorus conicus — Waxy-cap Hygrophorus, Conic Hygrophorus

DESCRIPTION.—*Cap:* Up to 2 inches broad, conical in shape, remaining unexpanded and usually with a relatively acute tip and lobed margin, splitting as the cap expands, fleshy, thin, fragile, waxy, bright scarlet-red, orange-red, or orange-yellow, sometimes tinged with greenish or blackish streaks, viscid, blackening when bruised. *Gills:* Almost free from the stem, waxy, rather broad, moderately close, yellowish then olivaceous and finally blackish. *Flesh:* Orange, lighter than the cap, without any particular taste or odour. *Stem:* Up to 4 inches long and ¼ inch thick, yellowish to reddish, blackening when bruised, cylindrical, becoming hollow; the surface with a ridged, twisted appearance. *Spore Print:* White.

HABITAT.—Solitary or in small groups on ground in moist coniferous forest. Occasionally in clearings and wet mossy banks along streams.

SEASON.—Late summer.

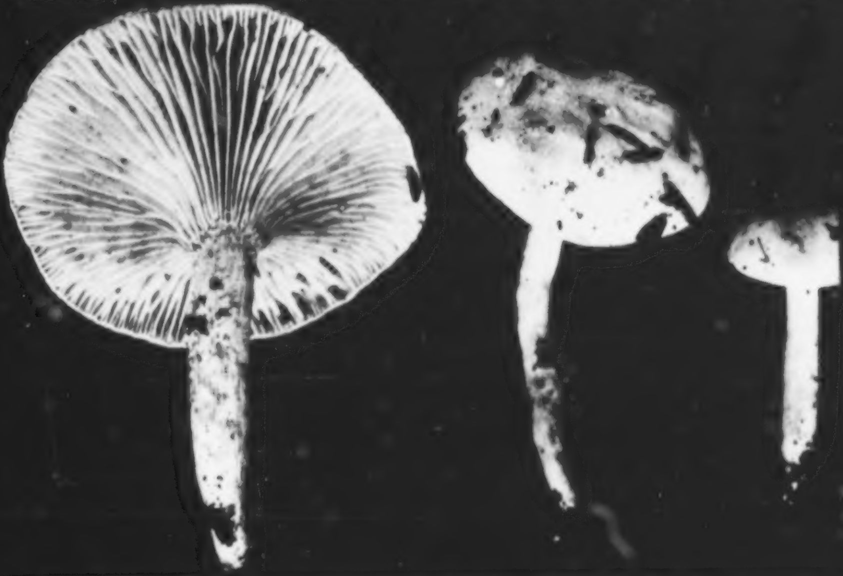
EDIBILITY.—Suspected.

COMMENTS.—The waxy-cap hygrophorus is small but is a very fascinating species of strikingly brilliant colour. It is easily recognized by its colour, conic cap, waxy gills, and discoloration to black when bruised or damaged. It is frequently labelled as a poisonous species, but some claim that it can be eaten.

Hygrophorus eburneus — Ivory-cap Hygrophorus

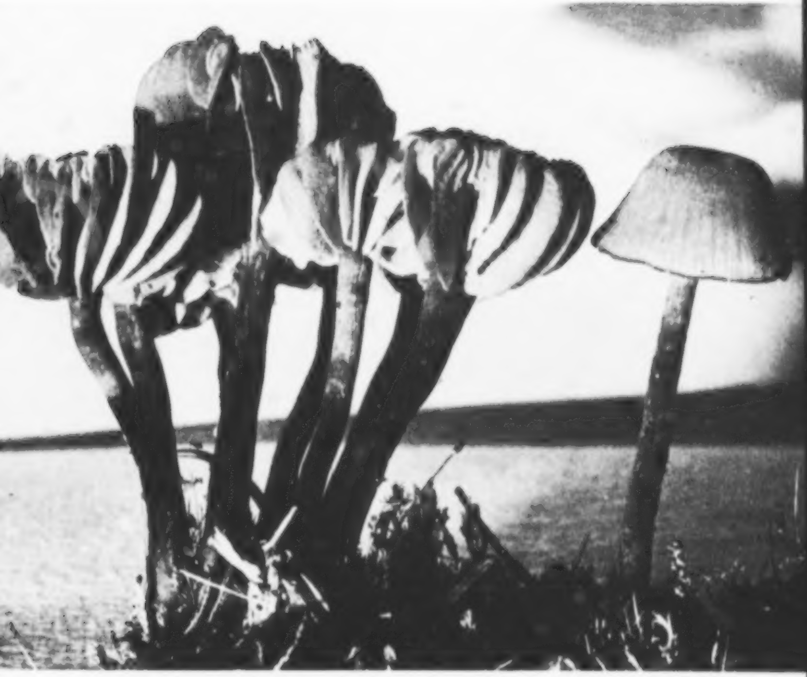
DESCRIPTION.—*Cap:* Up to 4 inches broad, umbonate or convex at first, becoming flat or sub-umbonate, the margin incurved and slightly woolly in young specimens, white or ivory, very viscid when moist, shining when dry. *Gills:* Thick, sometimes forked, broad, attached to the stem and running down it at maturity. *Flesh:* White, thick near the stem, the odour and taste not distinctive. *Stem:* Up to 5 inches long and ½ inch thick, tapering downwards, becoming hollow, white to ivory, viscid over most of its length. *Spore Print:* White.

HABITAT.—Scattered or in small groups on the ground in coniferous or deciduous forest.



Plant Research Institute, Ottawa.

Ivory-cap hygrophorus (*Hygrophorus eburneus*).



Bandoni.

Waxy laccaria (*Laccaria laccata*).

SEASON.—Fall.

EDIBILITY.—Edible, but not of first quality.

COMMENTS.—This whitish-coloured *Hygrophorus* is frequently abundant here and is relatively easy to identify. The freshly collected fruiting bodies are very viscid in wet weather. A related mushroom, *Hygrophorus hypothejus,* common in peat bogs in this area, also is extremely viscid. It has a yellow stem and a predominantly yellow cap.

Laccaria laccata — Waxy Laccaria

DESCRIPTION.—*Cap:* Up to 3 inches broad, convex, becoming plane, often with the margins upturned in age, thin, gills sometimes showing through the cap as lines, the surface smooth when young but becoming slightly roughened, reddish or reddish tan to dull orange, the colour changing with changes in moisture. *Gills:* Partially attached or sometimes slightly decurrent, thick, widely spaced, of the same colour as the cap or paler. *Flesh:* Thin, pinkish, the taste mild. *Stem:* Up to 6 inches in length and $^3/_{16}$ inch thick, cylindric, usually solid, fibrous, of the same colour as the cap. *Spore Print:* White.

HABITAT.—Growing on moist soil in a variety of habitats. Especially abundant in peat bogs and in rather open woods among mosses.

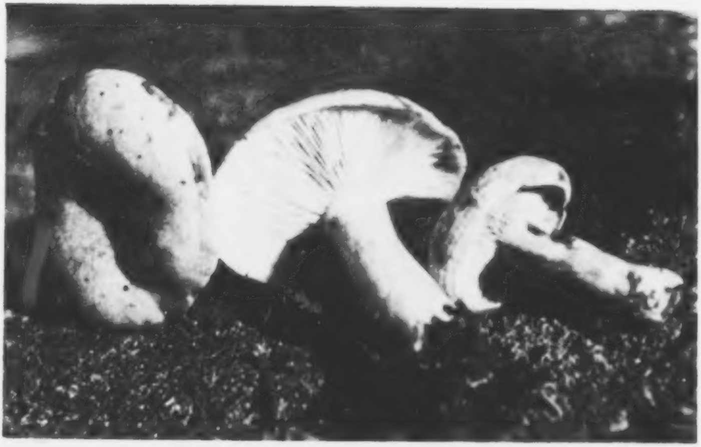
SEASON.—Spring through fall.

EDIBILITY.—Edible but of inferior quality.

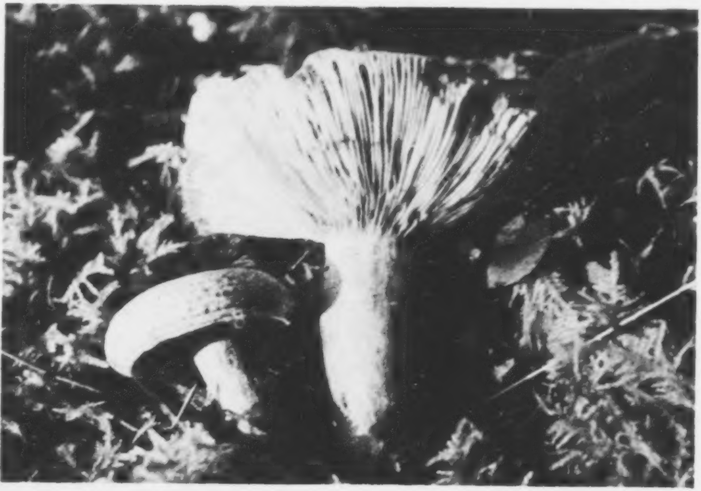
COMMENTS.—The waxy laccaria is one of our commonest mushrooms and probably is our most variable species. Because of the range in size and in colour, it is often difficult to recognize. A closely related species, and a very striking one, is the amethyst laccaria (*L. amethystina*). This species is of similar size and form to *L. laccata,* but the fruiting body is violet coloured.

GENUS *LACTARIUS*

The species of *Lactarius,* commonly called milky caps or milk-mushrooms, are distinguished from other mushrooms by the milky or coloured juice (latex) exuded when their gills or flesh are cut



Underhill.



Underhill.

Delicious lactarius (*Lactarius deliciosus*).

or broken. The taste of the latex is acrid in some species, but mild in others. It is advisable to avoid the acrid-tasting ones, for they are at least indigestible to some people.

A number of species occur in British Columbia, but only a few of particular interest are discussed here.

Lactarius deliciosus **Delicious Lactarius, Orange-milk Lactarius**

DESCRIPTION.—*Cap:* Up to 5 inches broad, fleshy, firm, smooth, rounded when young, with a central depression to broad funnel shape later, the margin inrolled at first and becoming upturned, carroty-orange, greyish-orange, or pale tan with characteristic circles or mottled zones of deeper hues on its surface (this marking is sometimes indistinct or lacking), often spotted or stained with green. *Gills:* Carroty-orange much clearer in colour than the cap, close, rather narrow, running down the stem (adnate-decurrent), exudes carrot-coloured latex when cut or broken, and this changes to green. *Flesh:* Firm, whitish to deep yellow tinged orange, odour rather pleasant, taste slightly acrid. *Stem:* Up to 3 inches long and 1 inch thick tapering downwards, becoming hollow, smooth, same colour as cap or paler, sometimes with a few bright orange blotches. *Spore Print:* Pale yellowish.

HABITAT.—Scattered or in groups on the ground, in open coniferous forest, open parkland, boggy areas, grassy edges of forest.

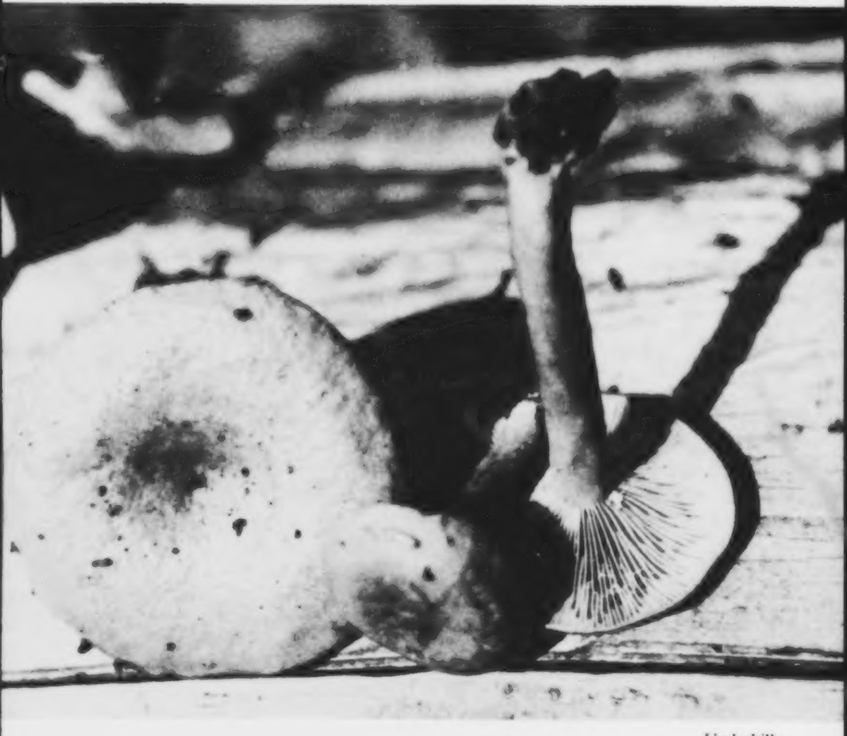
SEASON.—Late summer and fall.

EDIBILITY.—One of the best of edible species.

COMMENTS.—The delicious lactarius is similar to the red-juice milky cap (*Lactarius sanguifluus*). The latter is common in British Columbia, especially in young Douglas fir forest, and particularly abundant on the west coast of Vancouver Island. It also is edible and highly rated. It differs from *L. deliciosus* by exuding blood-red latex, and its gills are reddish in contrast to the carrot-coloured gills of *L. deliciosus.*

Lactarius rufus **Reddish Lactarius**

DESCRIPTION.—*Cap:* Up to 5 inches across, at first convex, the margin in-rolled, expanding and finally centrally depressed or shal-



Underhill.

Reddish lactarius (*Lactarius rufus*).

low funnel-shaped, smooth, reddish-brown. *Gills:* Attached to the stem and running down it a short distance, close, sometimes forked, dull yellowish, becoming reddish, exuding a white latex when cut or broken. *Flesh:* With a pinkish tinge, exuding white latex, soft, the odour not distinctive, the taste extremely hot and peppery. *Stem:* Up to 3–4 inches long, ½–¾ inch thick, cylindric, smooth or slightly hairy toward the base, the colour slightly paler than the cap, becoming hollow. *Spore Print:* White.

HABITAT.—Single or in small groups on the ground; in Douglas fir forest or, more abundantly, in peat bogs.

SEASON.—Summer to early winter.

EDIBILITY.—Reported to be poisonous.

COMMENTS.—This is one of our commonest mushrooms in the fall and early winter. It reaches its best development in the peat bogs of coastal British Columbia, but is common also in Douglas fir forests. The extremely hot flavour and the reddish-brown colour are good field characteristics.

Lactarius torminosus **Woolly Lactarius**

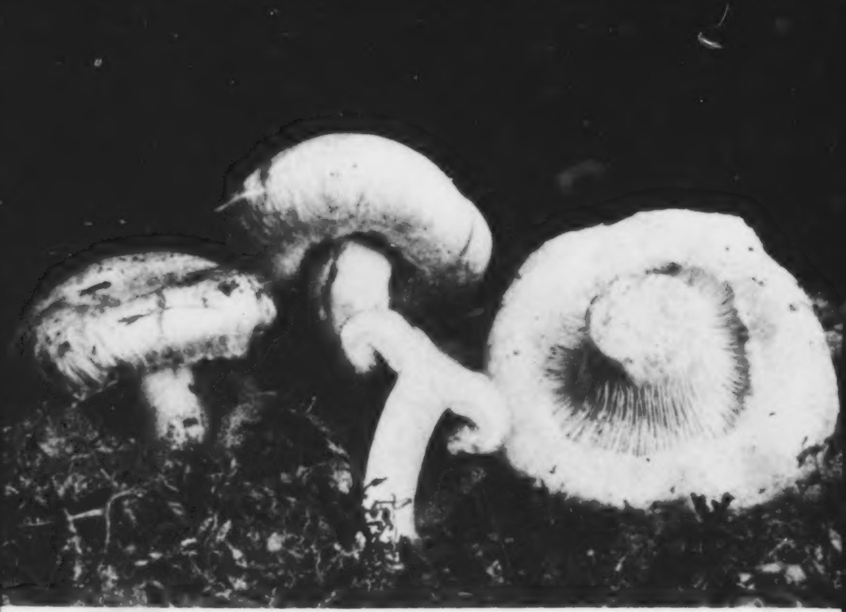
DESCRIPTION.—*Cap:* Up to 4 inches broad, funnel-shaped, depressed in the centre with margin first inrolled then decurved, fleshy, firm, creamy-yellowish to reddish-tan, often concentrically zoned, sticky to viscid, with a tomentose margin especially noticeable in young specimens. *Gills:* Close, rather narrow, attached to the stem and often running down it, forked near the stem, whitish, sometimes with fleshy or pinkish tint. *Flesh:* Firm, white or pinkish, exuding white latex, unchanging in colour and very bitter in taste. *Stem:* Up to 3 inches long and ¾ inch thick, cylindrical, paler than the cap, sometimes with pinkish tinge, solid becoming hollow, often appearing finely powdered. *Spore Print:* White.

HABITAT.—Singly or in small groups on ground in open places, usually associated with birch.

SEASON.—Late summer and fall.

EDIBILITY.—Not definitely established. To be avoided. (*See* Comments.)

COMMENTS.—This species apparently forms mycorrhiza with white birch, and in our Province the woolly lactarius is often seen



Todd.

Woolly lactarius (*Lactarius torminosus*).

Bandoni.

Orange lactarius (*Lactarius aurantiacus*).

in the vicinity of these trees with *Boletus scaber*. It has the reputation of being poisonous, but there are conflicting statements concerning this. An interesting comment is given by Ramsbottom (1959), who says that "*L. torminosus* deserves special mention for it is usual to regard it wrongly as very poisonous." He states that "when eaten raw it may cause the internal pains signified by the epithet *torminosus*—griping—but the irritant substance is destroyed by cooking. It is a favourite species in Finland. In Norway it is roasted and added to coffee."

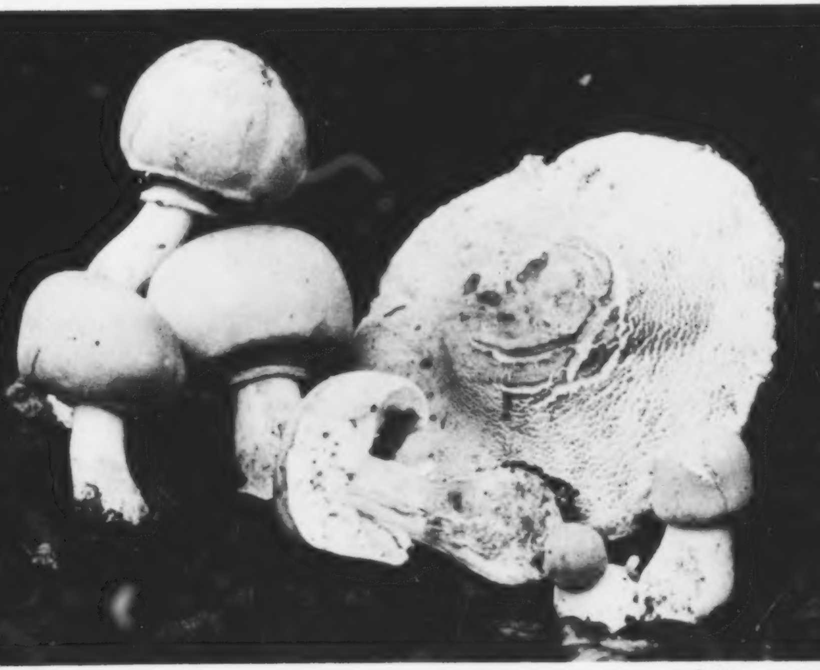
L. torminosus might be confused with *L. deliciosus*, but the two species can be separated easily for *L. deliciosus* has no woolly margin. In addition, *L. deliciosus* stains green when bruised or cut. The colour of the latex is white in *L. torminosus* and its taste is bitter, while that of *L. deliciosus* is of a mild flavour and orange in colour.

The orange lactarius (*Lactarius aurantiacus*) frequently is abundant in British Columbia and is relatively easy to identify, having a viscid orange cap, slightly paler gills and stem. Its latex is milk colour, and it does not stain yellow when injured. Although many people consider this mushroom edible, it has a bitter taste and according to some reports is not palatable. It should be avoided therefore.

GENUS *LEPIOTA*

The lepiotas are similar to amanitas in appearance, but they do not have a cup. They also lack the wart-like or membranous remnants of the universal veil that are common in many species of *Amanita*. The name *Lepiota* is derived from the Latin term *lepis*, meaning a scale, a number of the species having scaly caps. As in *Amanita* and a number of other genera, the stem separates cleanly and easily from the cap. The annulus is persistent and often is movable on the stem. The spore prints are white.

The species of *Armillaria* have a number of the characteristics listed above. However, their gills are attached to the stem, while those of the lepiotas are free. In addition, the stem in *Armillaria* does not separate cleanly from the cap.



Todd.

Smooth lepiota (*Lepiota naucina*).

Lepiota naucina **Smooth Lepiota, White Lepiota**

DESCRIPTION.—*Cap:* Up to 4 inches broad, ovoid at first, becoming convex or almost plane, fleshy, dry, smooth or sometimes irregularly cracked. *Gills:* Free from the stem, broad, close, at first white, then pinkish, finally pale reddish-brown, drying brown. *Flesh:* Thick, firm, white, of mild taste and odour. *Stem:* Up to 6 inches long, about ½ inch thick, cylindric or with a slightly swollen base, white, smooth, solid then hollow, separating cleanly and easily from the cap. *Ring:* Membranous, prominent, collar-like, and often movable. *Spore Print:* White.

HABITAT.—Solitary or in colonies on grassy open places such as lawns, pastures, fields, etc.

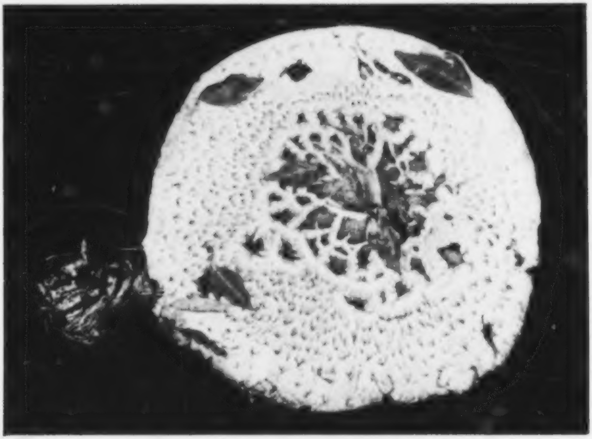
SEASON.—Summer and fall.

EDIBILITY.—Edible but not recommended.

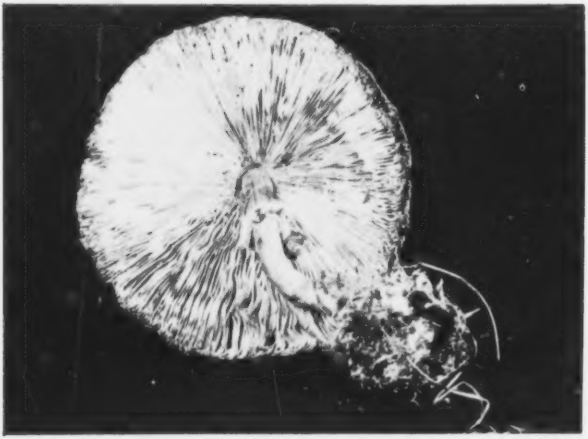
COMMENTS.—This species is usually listed as edible and choice by most authors, but many warn of possible confusion with species of *Amanita.* We are aware of five cases of poisoning in the past five years which were attributed to this species. Although we are not certain that this was actually the species concerned in all these instances, misidentification does not seem likely in all five. It is possible that either a very closely related species was responsible or that our variety of the species is poisonous to some individuals. The poisoning was mild, causing nausea and vomiting, and all persons recovered quickly.

Lepiota rachodes **Shaggy Lepiota**

DESCRIPTION.—*Cap:* Up to 10 inches broad, occasionally larger, nearly spherical at first, becoming convex, then plane or sometimes slightly umbonate, fleshy, tan or fawn, the surface breaking up into flat, upturned scales arranged in concentric rings and giving a shaggy appearance, the flesh white beneath the scales. *Gills:* Free from the stem, broad, close, white, bruising yellowish then brown. *Flesh:* Soft, thick, white turning pinkish when bruised or exposed. *Stem:* Up to 8 inches long and 1 inch thick, swollen at the base and tapering upwards, greyish-white often tinged with brown below, smooth, solid. *Ring:* Thick, double. *Spore Print:* White.



B.C. Govt. photo.



B.C. Govt. photo.

Shaggy lepiota (*Lepiota rachodes*).

HABITAT.—Singly or in groups on ground in grassy places near outbuildings, in gardens and open woods.

SEASON.—Summer and fall.

EDIBILITY.—Edible.

COMMENTS.—The shaggy lepiota is closely related and similar in appearance to the green-gilled lepiota (*Lepiota molybdites*). The latter also has been called *L. morgani* and is considered poisonous. The green-gilled lepiota is distinguished from *L. rachodes* by its dull-green spores and by the pale greenish colour of the gills. *L. molybdites* is not definitely known to occur in British Columbia.

Marasmius oreades **Fairy Ring Mushroom**

DESCRIPTION.—*Cap:* Up to 2 inches broad, bluntly rounded at first, the margin incurved, becoming bell-shaped or convex, finally almost plane and the margins sometimes upturned with age, smooth, tan to dull reddish-brown when young, dull orange to tan or buff when older, paler when dry. *Gills:* Almost free from the stem, distant, united by vein-like ridges in the inter-spaces, paler than the cap. *Flesh:* Whitish or pale tan, fragrant, with a mild flavour. *Stem:* Up to 3 inches long, about ¼ inch thick, tough, flexible, cylindric, finely hairy, usually paler than the cap above, and of about the same colour as the cap toward its base. *Spore Print:* White.

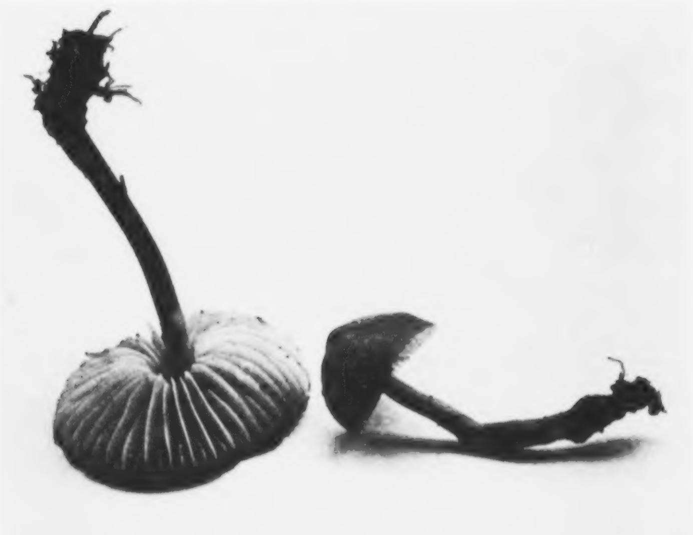
HABITAT.—Usually in groups on lawns, fields, or other grassy places, often forming rings or partial rings.

SEASON.—Spring to late fall.

EDIBILITY.—Edible, with a delicate flavour.

COMMENTS.—The fairy ring mushroom is one of our commonest species on lawns. The rings of this mushroom (and others) were once thought to be caused by elves and fairies who danced in a circle, each step being marked by the appearance of a mushroom.

The growth of this mushroom is of concern to gardeners, since it kills the grass in the centre of fairy rings. There are several fungicides which can be used to treat soil infected by *M. oreades*.



Bandoni.

Fairy ring mushroom (*Marasmius oreades*).

When collecting this mushroom for the table, take only the caps; the stems are much too tough. The caps can be cooked while fresh or they may be dried and stored for later use.

The garlic marasmius (*M. scorodonius*), a related species, is a much smaller mushroom with a tan or brownish cap not more than ½ inch broad and a stem about 1½ inches long. It is easily identified by its distinct garlic taste and odour. This small mushroom is often found in coniferous forests, where it grows on decaying branches or litter.

Mycena hæmatopus **Reddish-brown Mycena**

DESCRIPTION.—*Cap:* Up to 1½ inches broad, at first egg-shaped, expanding to broadly bell-shaped or conic, smooth or with radiating ridges at the margin, the margin scalloped, reddish-brown on the disk, paler toward the margin or the margin greyish. *Gills:* Partially attached to the stem, whitish to grey with a reddish tinge, stained reddish-brown in age. *Stem:* Up to 4 inches long and about ⅛ inch thick, cylindric, hollow, brittle, tinged with red and exuding a dark red juice when broken. *Spore Print:* White.

HABITAT.—Single or in small clusters on rotten logs, especially of alder.

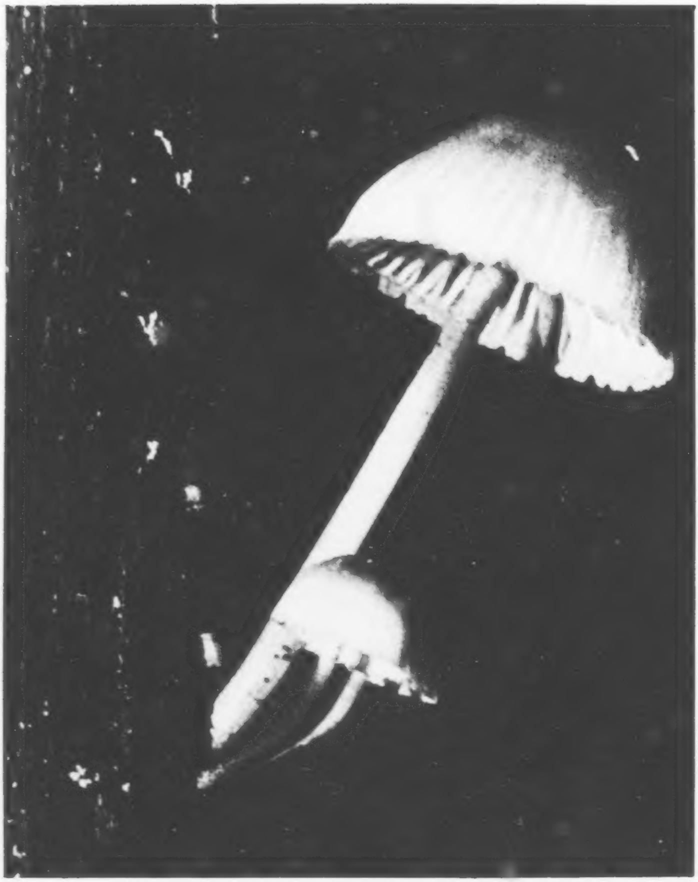
SEASON.—Spring to early winter.

EDIBILITY.—Edible, but not highly rated.

COMMENTS.—The genus *Mycena* is well represented in British Columbia. The species are mostly small and thus are of little value as food. However, their abundance and bright colours often attract the collector.

Omphalina umbellifera **Umbrella-like Omphalina**

DESCRIPTION.—*Cap:* Up to ¾ inch broad, rounded, then plane with the margin becoming notched at the edge (scalloped), fleshy-membranous, white becoming greyish or creamy white, showing radiating lines when moist. *Gills:* Runnning down the stem, broad, very distant, same colour or slightly lighter than cap. *Flesh:* Very thin, whitish, without noticeable taste or odour. *Stem:* Up to 1 inch long, and about ⅛ inch thick, smooth, cartilaginous,



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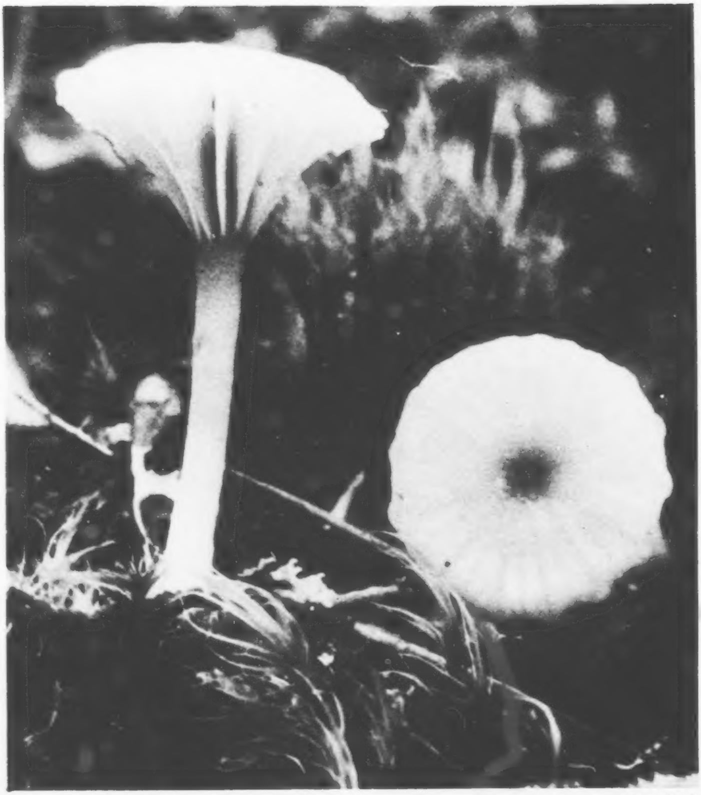
Reddish-brown mycena (*Mycena hæmatopus*).



Bandoni.

Umbrella-like omphalina (*Omphalina umbellifera*).

solid, becoming hollow, the same colour as the cap. *Spore Print:* White.

HABITAT.—Singly or scattered in open areas on shallow moss-covered soils or on decaying wood in damp, shady coniferous or mixed forest.

SEASON.—Spring, fall, and winter.

EDIBILITY.—Edible.

COMMENTS.—This mushroom is included here because of its abundance and its interesting form. It is considered edible, but, because of the small size, it is of little use except as an emergency food.

Genus *Omphalina* is represented in British Columbia by a number of species; all are small and not easily separated in the field. They are distinguished by a white spore print and gills running down the cartilaginous stem.

Panus torulosus **Leathery Panus**

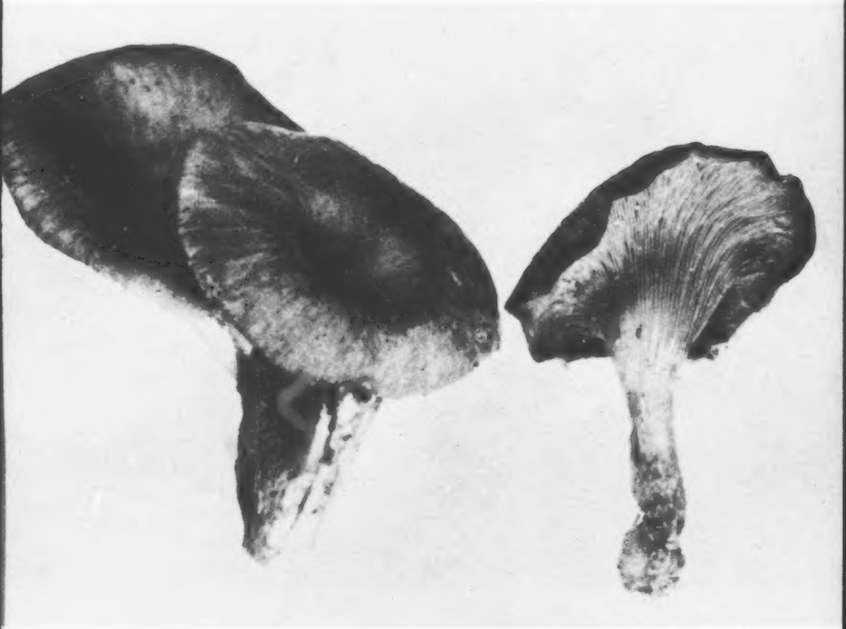
DESCRIPTION.—*Cap:* Up to 5 inches broad, at first rounded with an inrolled margin, expanding to plane or funnel-shaped, brownish tinged violet or reddish, velvety when young becoming smooth at maturity. *Gills:* Running down the stem, narrow, close, a few forked, reddish or violet when young, tan or with a lilac or reddish tint when mature. *Flesh:* Whitish, tough, of mild taste and odour. *Stem:* 1–2 inches long and about ¾ inch thick, solid, tough, velvety, pale violet or greyish, eccentric to almost lateral. *Spore Print:* White.

HABITAT.—Solitary or in small clusters on decaying wood, especially of alder.

SEASON.—Spring to fall.

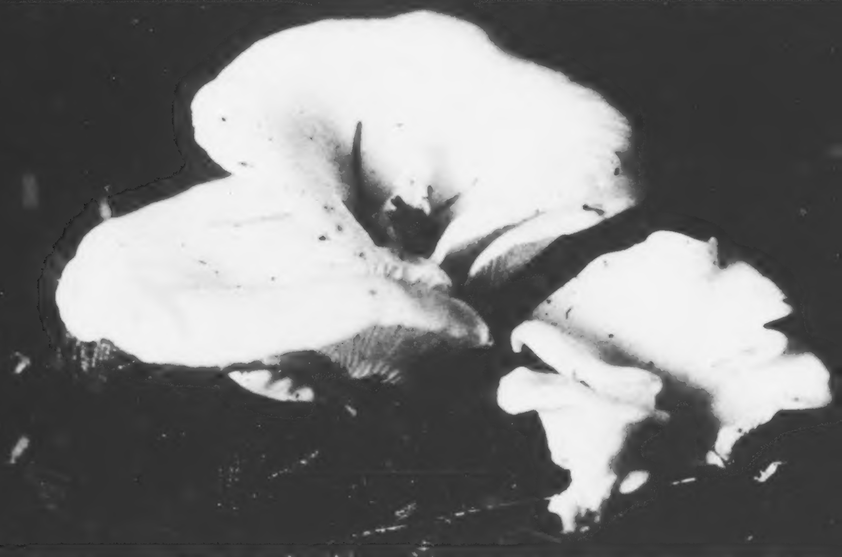
EDIBILITY.—Edible but tough.

COMMENTS.—Mushrooms belonging to the genus *Panus* might be confused with *Pleurotus,* but they are of tougher consistency. Most *Panus* species are too tough to be of any interest as a food, and one species is reported to be poisonous.



Plant Research Institute, Ottawa.

Leathery panus (*Panus torulosus*).



Nicholls.

Angel wings (*Pleurotus porrigens*).

Pleurotus porrigens **Angel Wings, Expanded Pleurotus**

DESCRIPTION.—*Fruiting Body:* Fan-shaped, sessile, or with the cap drawn out into a stem-like portion, up to 3½ inches long and ⅔ inch broad, thin, fragile, the margin inrolled, cottony toward the base, smooth above, glistening white. *Gills:* White or whitish, close, narrow, a few forking near the base. *Flesh:* White, thin, the odour and taste mild. *Stem:* Lacking. *Spore Print:* White.

HABITAT.—Scattered or, more commonly, in large numbers on decaying logs of conifers, especially of hemlock.

SEASON.—Fall.

EDIBILITY.—Edible, mild-flavoured.

COMMENTS.—This mushroom often occurs in very large numbers on fallen hemlock logs. Though small and with thin flesh, it can be collected in quantity for cooking. It can be dried, salted, and eaten uncooked.

Pleurotus sapidus **Oyster Mushroom**

SYNONYM.—*Pleurotus ostreatus.*

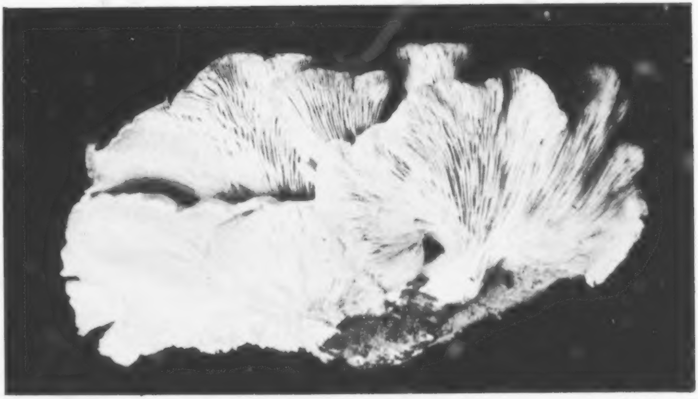
DESCRIPTION.—*Fruiting Body:* Up to 8 inches broad, almost circular to fan or shell shaped, sometimes centrally depressed, the margin incurved, sometimes lobed, smooth, white to pale tan or brownish. *Gills:* Extending down the stem or stem-like portion, close, thin, white or greyish. *Flesh:* Thick, white, soft when young, with a mild taste and odour. *Stem:* Present and almost centrally placed to lateral, or lacking, solid, of the same colour as the cap. *Spore Print:* Lilac.

HABITAT.—Usually in large clusters on trunks of dead trees, especially alder in this region.

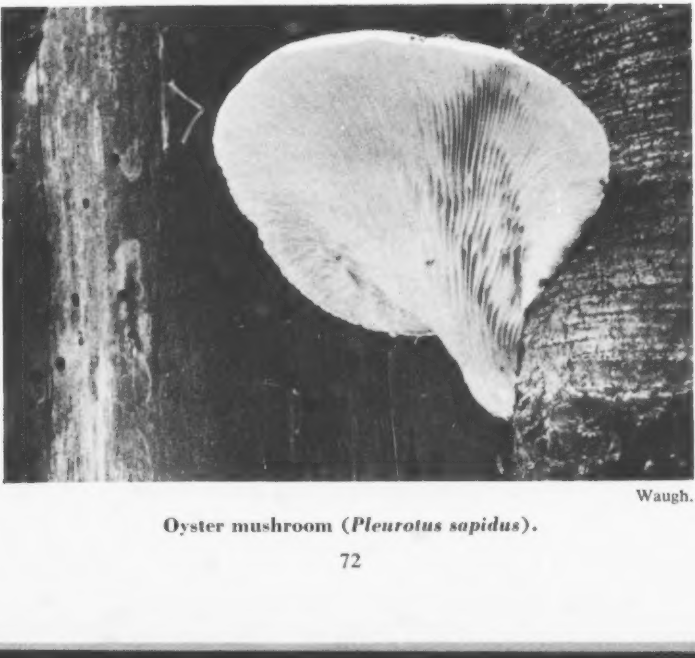
SEASON.—Spring to late fall.

EDIBILITY.—Edible and choice when young.

COMMENTS.—The oyster mushroom often occurs in very large clusters and can be recognized by the habit and by the lilac-coloured spore print. The fruiting bodies become tough with age and are then no longer suitable as food.



Nicholls.



Waugh.

Oyster mushroom (*Pleurotus sapidus*).

Pleurotus serotinus is common on alder and wild cherry, especially during the late fall and winter months. It has a viscid greenish to olive or brownish cap and cream-coloured to yellow or pale-orange gills. It has a very short yellow stem-like structure at the point of attachment. This species is edible, but it is not of high quality. The cooked mushrooms often have a rather unpleasant bitter taste.

GENUS *RUSSULA*

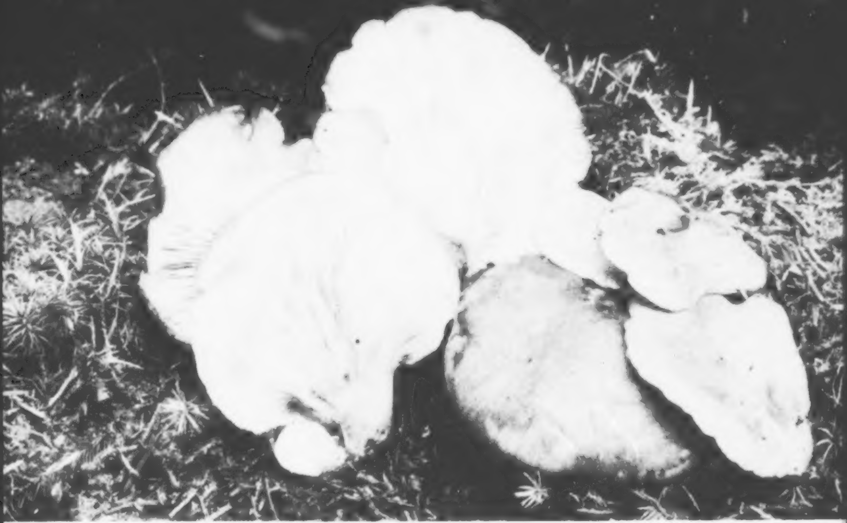
The russulas are among the most abundant of our mushrooms. They often are brightly coloured and have fragile caps, stems, and gills. In one group, however, the flesh is firm, not particularly fragile, and the caps are not brightly coloured (*R. nigricans* and *R. delica*). Most species have short thick stems and there is no ring or cup present. The spores are white to buff or pale yellowish in mass. In many species the cap colour is extremely variable. Most of the species are considered edible, but the peppery forms should be avoided. One of these, *R. vesicatoria,* may blister the tongue and lips if tasted raw.

The genus *Russula* is a very large one, and identification of most of the species requires microscopic examination. We have included only a few of the more commonly seen species.

Russula delica **White Russula**

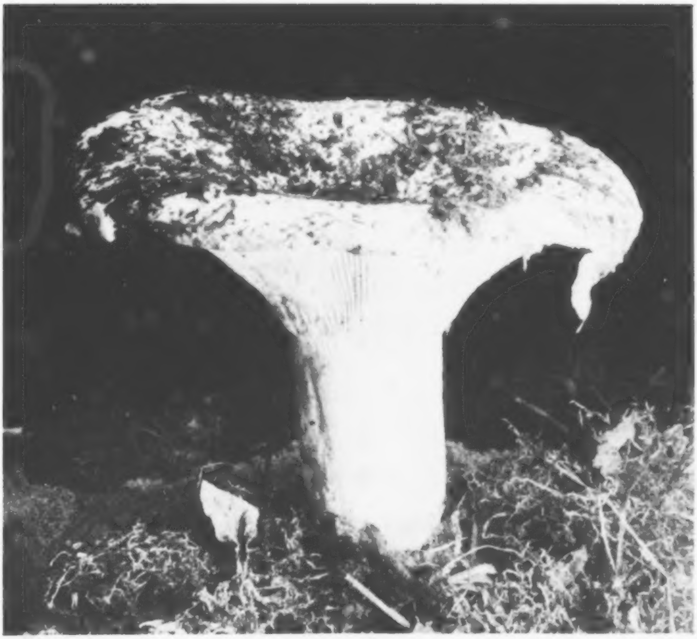
DESCRIPTION.—*Cap:* Up to 8 inches broad, occasionally larger, convex at first with incurved margin, becoming centrally depressed and funnel-shaped when old; fleshy, firm, dry, smooth, or very finely hairy; white or creamy, often with rusty patches and with particles of humus attached to it. *Gills:* Extending down the stem, thin, and short, few forked, white turning faintly green on the edges when old. *Flesh:* White, very firm, thick, not changing colour when bruised, mild or slightly acrid in taste. *Stem:* Up to 3 inches long and ¾ inch thick, cylindric or tapering downwards, smooth, sometimes with a narrow greenish zone beneath the gills. *Spore Print:* White.

HABITAT.—Solitary or scattered on ground rich in humus in coniferous or mixed forest, often partially obscured by the debris which it pushes up.



Nicholls.

Late pleurotus (*Pleurotus serotinus*).



Todd.

White russula (*Russula delica*).

SEASON.—Summer and fall.

EDIBILITY.—Edible but of inferior quality.

COMMENTS—A very common and conspicuous mushroom frequently occurring in summer in moist coniferous forest along the coast. In appearance it resembles the peppery milky mushroom (*Lactarius piperatus*) but can be easily separated by the lack of milky juice. The white russula can also be confused with the related species *R. vesicatoria*, which is smaller and has gills equal in length (not alternating long and short as in the white russula). *R. vesicatoria* should be avoided as it may cause blistering of the lips and mouth when tasted raw.

Russula emetica **Emetic Russula**

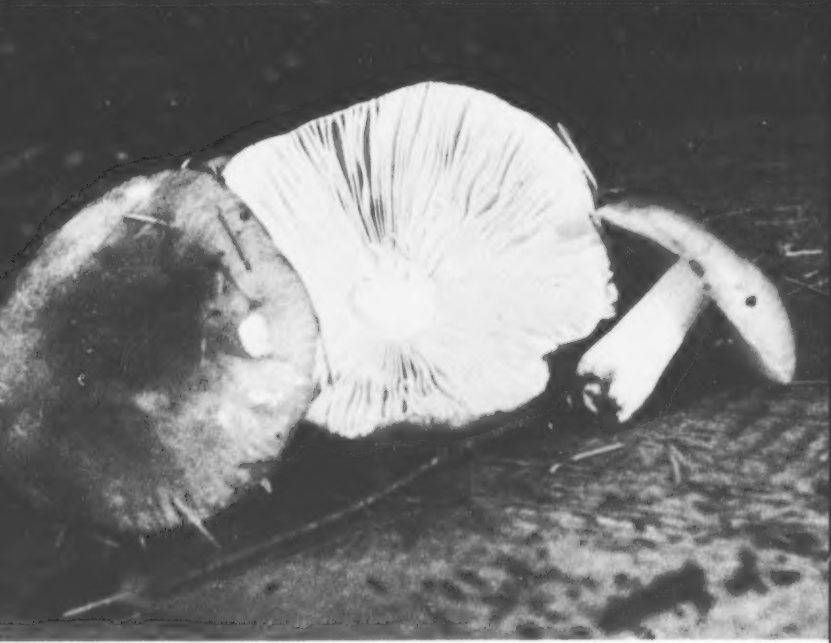
DESCRIPTION.—*Cap:* Up to 4½ inches broad, rounded at first, becoming plane or with the margins upturned in age, bright red or sometimes mottled yellowish and red, fading with age, smooth, viscid when wet, the margin marked by radiating lines. *Gills:* Free from the stem or nearly so, white, thin, fragile, close. *Flesh:* White, with a thin reddish zone near the outer surface, very acrid (peppery) in flavour, the odour not distinctive. *Stem:* Up to 4 inches long and 1 inch thick, cylindric, fragile, becoming hollow, the surface smooth, white. *Spore Print:* White.

HABITAT.—Scattered or in small groups on the ground in coniferous forests; especially abundant in peat bogs in the lower mainland.

EDIBILITY.—Doubtful.

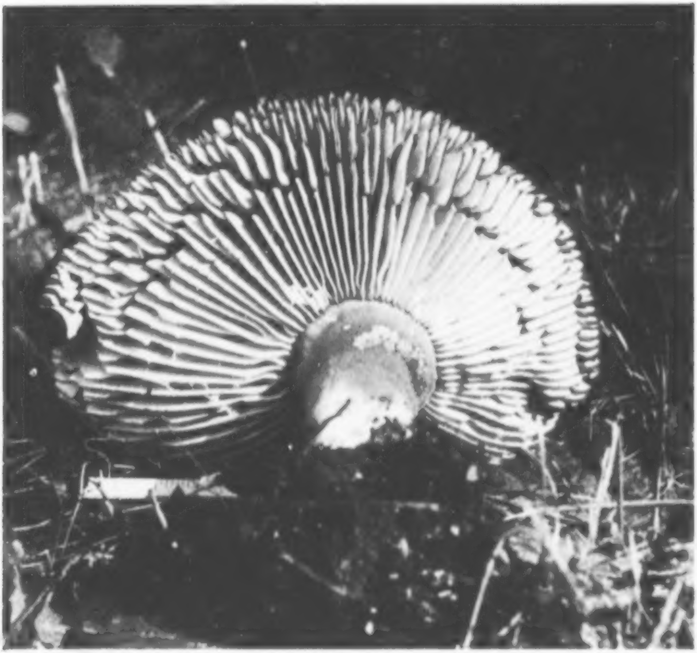
COMMENTS.—This striking mushroom is extremely peppery and opinions differ as to its edibility. According to some authors, the acrid taste disappears upon cooking and the mushroom is then safe to eat. Although the acrid taste disappears as reported, it is our experience that nausea and discomfort may still follow ingestion of this species.

Russula fragilis, a much smaller species, has the same general appearance and flavour as found in *R. emetica*. It, too, should be avoided.



Underhill.

Emetic russula (*Russula emetica*).



Waugh.

Blackening russula (*Russula nigricans*).

Russula nigricans **Blackening Russula**

DESCRIPTION.—*Cap:* Up to 7 inches broad, rounded in young specimens, then expanding and often becoming depressed in the centre, and shallow funnel-shaped, with the margin inrolled, fleshy, firm, smooth, slightly viscid when moist, whitish at first then smoky-grey finally blackish, turning reddish then blackish when bruised. *Gills:* Partially attached to the stem, unequal in length, thick, brittle, rather broad and distant, white changing to reddish then blackish when bruised. *Flesh:* White, firm, brittle, changing to reddish then black when cut or broken, taste mild or slightly acrid. *Stem:* 1½–4 inches long, about 1 inch thick, cylindrical, firm, solid, whitish but changing as with the cap. *Spore Print:* Whitish.

HABITAT.—Usually solitary on ground, mainly in coniferous forest.

SEASON.—Summer and fall.

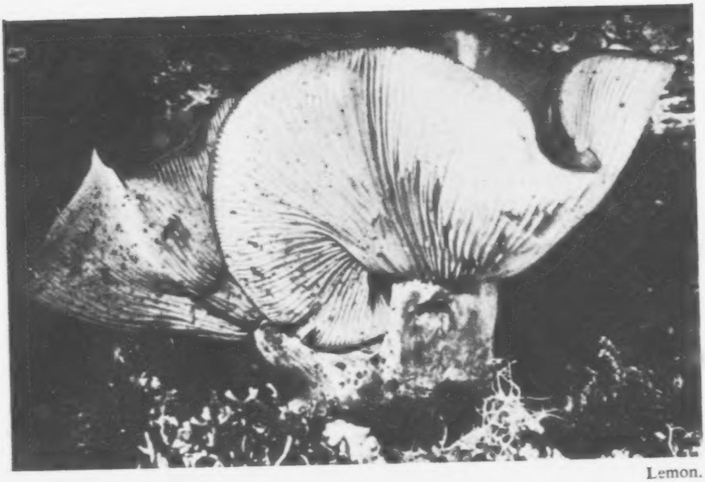
EDIBILITY.—Edible, considered as good by some.

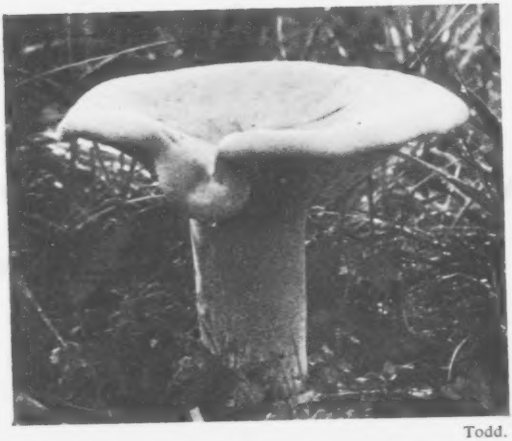
COMMENTS.—This rather large *Russula* is common on the coast and is easy to recognize by the colour change on bruising and the blackening with age. Only the young caps should be selected for food, and they must be examined for the presence of insect larvæ. As with most *Russulas* in British Columbia, the fruiting bodies often are wormy at an early age.

Tricholoma personatum **Blewit**

DESCRIPTION.—*Cap:* Up to 5 inches broad, rounded with strongly incurved margin at first, becoming flat or with margin irregularly upturned, moist, smooth, violet-grey or brownish tinged with lilac or purple, fading to dirty white. *Gills:* Attached to stem and notched, rather broad, crowded, bluish at first, becoming lavender to greyish-buff. *Flesh:* Firm, whitish or greyish tinted lavender, taste pleasant. *Stem:* Up to 3 inches long, ½–1 inch thick, often bulbous at the base, downy when young, smooth at maturity, solid, lavender or bluish fading to whitish. *Spore Print:* Flesh-coloured.

HABITAT.—Single or in clusters on ground in deciduous, mixed, or coniferous forest, or grassy edges of woods. Usually occurring when there is abundance of decaying leaves or similar material.


Lemon.


Todd.

Blewit (*Tricholoma personatum*).

SEASON.—Fall.

EDIBILITY.—Considered as one of the choice edible species.

COMMENTS.—The blewit is common in British Columbia and is one of the better edible species with good texture and pleasant taste. Some people claim that the flavour is rather disagreeable, and this, in our opinion, is true when over-mature specimens are cooked. The blewit frequently is confused with species of *Cortinarius*. The latter have the characteristic cobwebby veil, prominent especially in young specimens, and rusty-brown spores.

Xeromphalina campanella **Golden Trumpets**

SYNONYM.—*Omphalia campanella*.

DESCRIPTION.—*Cap:* Up to 1 inch broad, thin, convex at first expanding to rounded or plane with a depressed centre, fragile, dull orange-yellow to dull yellowish-brown, darker at the centre, fading on drying, margin somewhat incurved and marked with radiating lines. *Gills:* Running down the stem yellowish, sometimes forked and with prominent interconnecting veins. *Flesh:* Thin, pliant, yellowish, without any particular taste or odour. *Stem:* Up to 1½ inches long, usually under ⅛ inch thick, uniform in diameter, smooth, cartilaginous, yellowish at first, becoming dark brown from the base upwards in age, with a tuft of hyphæ at the base. *Spore Print:* White.

HABITAT.—Occurring in large numbers on decaying wood, particulary on old rotted logs and stumps of coniferous trees.

SEASON.—Spring to fall or early winter.

EDIBILITY.—Edible.

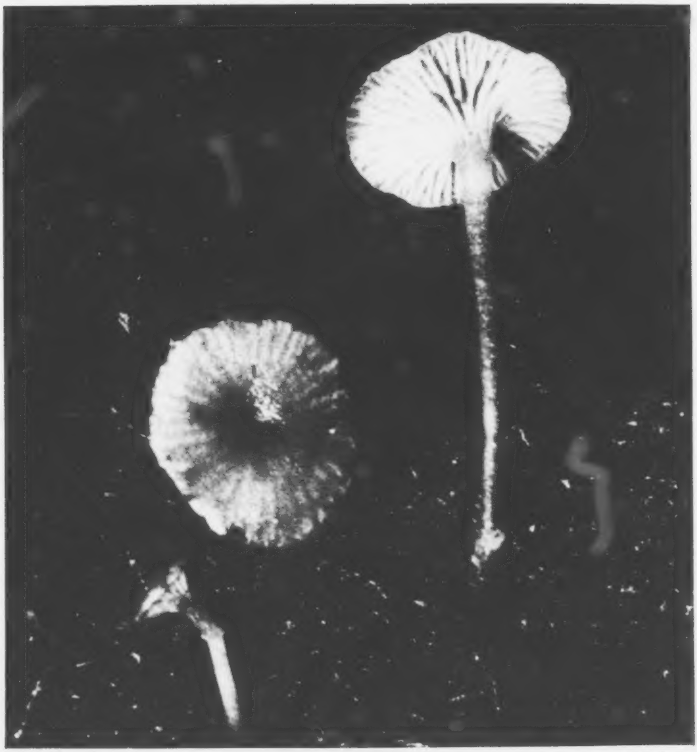
COMMENTS.—Although edible, *X. campanella* is too small to be of much value as food.

GROUP II

(SPORES PINKISH)

KEY TO GENERA

1. Fruiting body sessile or with a laterally attached stem .... {_Phyllotopsis_* _Claudopus_*
1. Fruiting body with a central stalk 2
    2. Gills free from stem; stem readily separating from cap 3
    2. Gills attached to stem; stem not separating 4



Bandoni.

Golden trumpets (*Xeromphalina campanella*).

3. Cup present .... *Volvariella**

3. Cup lacking .... *Pluteus*

  4. Stem fleshy or fibrous 5

  4. Stem cartilaginous 6

5. Gills attached and notched (sinuate) or partially attached (adnexed), sometimes breaking free (spores angular) (pinkish spored *Tricholomas* may key out here; some treat them as a distinct genus, *Lepista*, characterized by roughened but not angular spores) .... *Entoloma*

5. Gills running down the stem (spores longitudinally striate) .... *Clitopilus**

  6. Gills running down the stem (decurrent) .... *Eccilia**

  6. Gills attached (adnate) to partially attached (adnexed), often breaking free from stem 7

7. Cap margin incurved at first, maturing convex to umbilicate or centrally depressed .... *Leptonia**

7. Cap margin straight, the mature caps conic to campanulate .... *Nolanea**

Pluteus cervinus Deer Mushroom, Fawn-coloured Pluteus

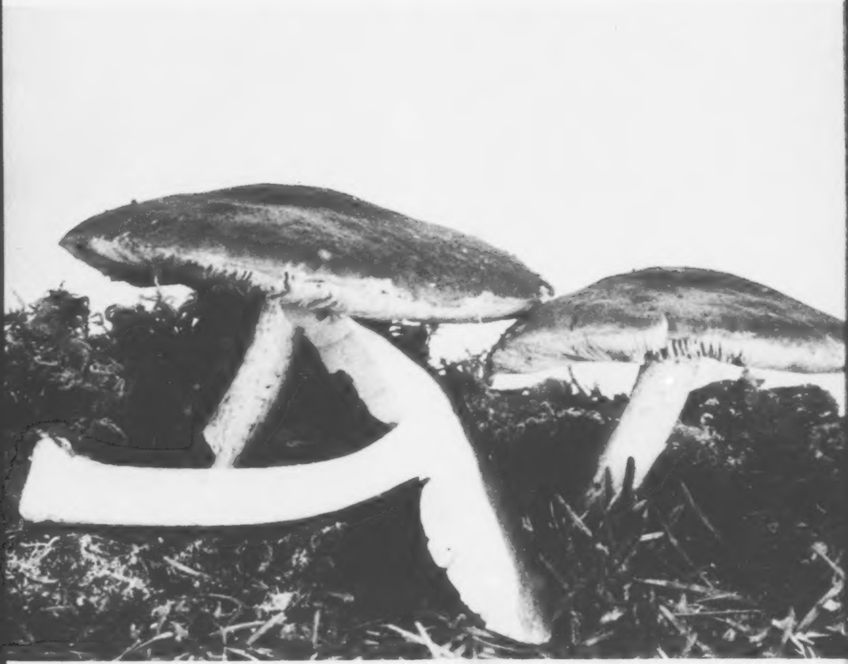
DESCRIPTION.—*Cap:* Up to 5 inches broad, rounded, expanding to broad bell-shaped, finally plane or with a slight umbo, at first uneven, then smooth, moist, sometimes slightly sticky but not viscid; dark brown and becoming tan with age, the centre usually darker than the margin. *Gills:* Free from the stem, close, whitish at first, becoming pink as the spores mature. *Flesh:* Thick, soft, white, the odour and taste not distinctive. *Stem:* Up to 6 inches long, ¼–½ inch thick at the top, slightly enlarged toward the base, smooth, solid, whitish to pale brown, separating cleanly and easily from the cap. *Spore Print:* Flesh-pink.

HABITAT.—Solitary or in groups on decaying wood, on sawdust piles, or on buried wood, in moist shady habitats.

SEASON.—Spring to fall.

EDIBILITY.—Edible.

COMMENTS.—The deer mushroom can be recognized by its habitat, the kid-like texture and colour of the cap, pink spores, and by the stem readily separating from the cap.



Todd.

Deer mushroom (*Pluteus cervinus*).

GROUP III
(SPORES YELLOW-BROWN, RUSTY BROWN, CINNAMON BROWN)

KEY TO GENERA

1. Gills separating readily from cap, running down the stem and frequently anastomosing; stalk sometimes centric, more commonly eccentric or laterally attached .... *Paxillus*

1. Gills not separating readily, if running down stem not anastomosing 2

  2. Stem lateral or lacking .... *Crepidotus**

  2. Stem present, centric 3

3. Ring present, conspicuous 4

3. Ring lacking (in a few species included here, a poorly developed ring is sometimes present) 6

  4. Ring typically small, not pendulous; cap often with scales and the stem of many species scaly below the ring .... *Pholiota*

  4. Ring large, pendulous; cap with a dry powdery or granulose covering but not scaly; stem smooth below ring 5

5. Surface of cap often uneven, wrinkled to corrugated; gill edges typically crisped; stem and ring white .... *Rozites**

5. Surface of cap smooth; gill edges not crisped; stem and lower surface of ring golden brown .... *Phæolepiota*

  6. Cortina present, sometimes leaving a persistent band on stem; universal veil, if present, forming similar bands at base of stem; base of stem abruptly swollen and almost cup-like in some species .... *Cortinarius*

  6. Cortina lacking 7

7. Gills running down stem; cap often centrally depressed .... *Tubaria**

7. Gills attached (adnate) or partially attached (adnexed) 8

  8. Stem fleshy 9

  8. Stem cartilaginous, typically fragile 11

9. Cap dry, silky-fibrillose or scaly, conic to campanulate or umbonate when mature; spore print bright rust colour .... *Inocybe*

9. Cap usually viscid 10

  10. Spores dull brown or clay coloured; odour and taste often of radishes; gills partially attached; mostly on ground .... *Hebeloma*

  10. Spores rusty brown; gills attached; mostly growing on wood .... *Flammula**

11. Gills deliquescing (dissolving); cap plicate-striate; stem hollow .... *Bolbitius**

11. Gills not deliquescing 12

  12. Margin of cap incurved to inrolled at first, mature cap convex or campanulate .... *Naucoria**

  12. Margin of cap straight, cap often translucent-striate 13

13. Spore print yellowish; cap umbonate or campanulate at maturity (spores lacking a lens-shaped pore) .... *Galerina*

13. Spore print rusty; cap broadly conic (spores with lens-shaped pore) .... *Conocybe*

GENUS *CORTINARIUS*

The genus *Cortinarius* is a very large one, containing many attractively coloured species. One of the characteristics separating this genus from most others is the presence of a unique veil, the cortina, covering the gills of young specimens. It is composed of delicate strands of hyphæ. The cortina can be seen only in young specimens as it disappears rapidly in most species. It often leaves a faint ring-like zone on the stem. Some species of *Inocybe* and *Hebeloma* have similar veils, and these can be distinguished from *Cortinarius* only by means of microscopic features.

Cortinarius cinnamomeus **Cinnamon Cortinarius**

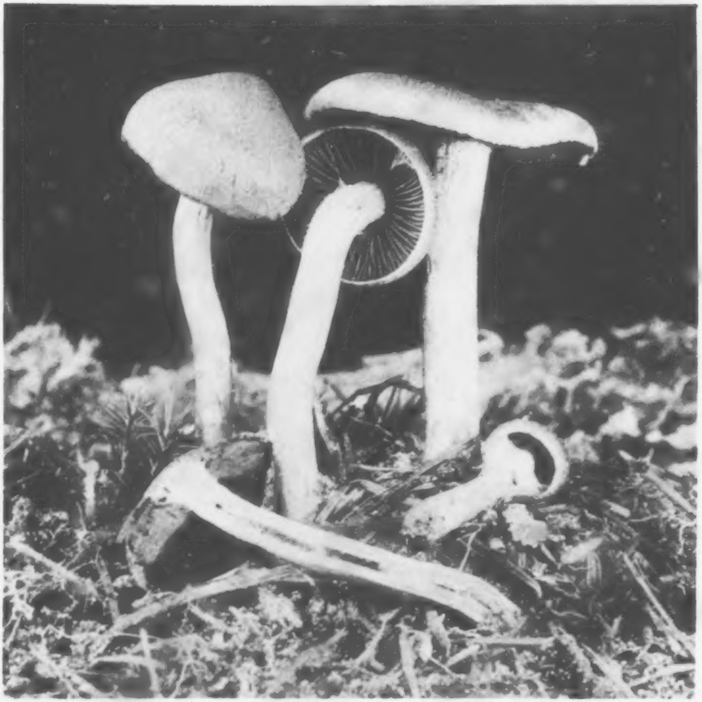
DESCRIPTION.—*Cap:* Up to 3 inches broad, hemispheric or campanulate, becoming almost flat at maturity, sometimes with an umbo, fleshy, fragile, smooth and silky, yellowish-brown to cinnamon brown. *Gills:* Attached to the stem, thin, narrow, close, yellow when young, turning brown. *Flesh:* From light yellow to tawny, the odour and taste mild. *Stem:* Up to 4 inches long, ¼ inch thick, cylindric, solid or hollow, pale yellowish, often tinged with olive, with a fibrillose surface. *Spore Print:* Brown.

HABITAT.—Singly or in small groups on the ground in coniferous woods.

SEASON.—Summer and fall.

EDIBILITY.—Edible and highly esteemed by some.

COMMENTS.—This species and *C. semisanguineus* are abundant in the coastal forests during late summer and fall. A third species, sometimes found in British Columbia, is *C. cinnabarinus*. It is blood red in colour, but similar to *C. cinnamomeus* in size and form.



Todd.

Cinnamon cortinarius (*Cortinarius cinnamomeus*).

Cortinarius semisanguineus **Red-gilled Cortinarius**

DESCRIPTION.—*Cap:* 2–3 inches broad, convex when young, expanding to broadly rounded, sometimes umbonate, smooth, silky, tawny to cinnamon yellow. *Gills:* Attached to the stem, narrow, crowded, blood red, but the colour changing with the direction of viewing and light. *Flesh:* Yellowish-white, of mild taste and odour. *Stem:* Up to 3 inches long, ¼ inch thick cylindric, solid, sometimes covered by scattered thread-like remnants of the cortina, yellowish or tawny. *Spore Print:* Brown.

HABITAT.—Scattered or in small groups on the ground in coniferous woods. Often occurring in peat bogs.

SEASON.—Summer and fall.

EDIBILITY.—Edible.

COMMENTS.—The blood-red gills and yellowish cap and stem are features which identify this species. The red-gilled cortinarius is common in coastal British Columbia, often occurring with the cinnamon cortinarius.

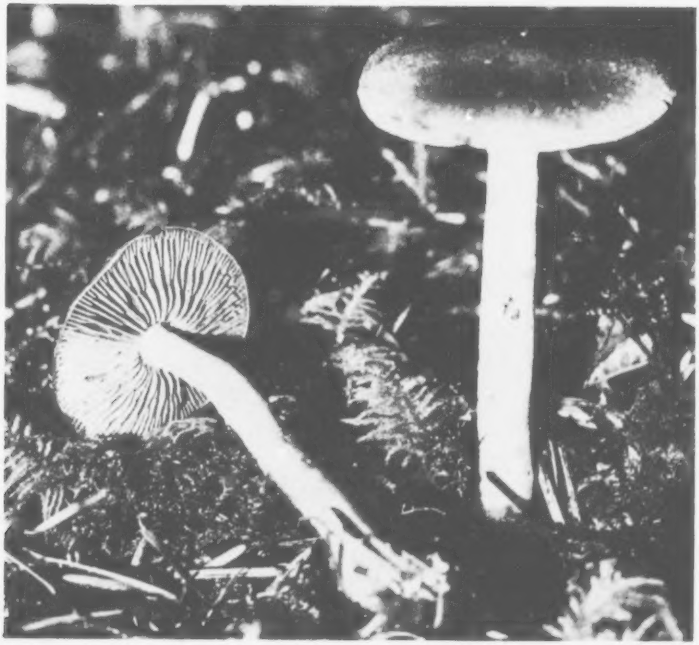
Cortinarius violaceus **Violet Cortinarius**

DESCRIPTION.—*Cap:* Up to 5 inches broad, convex when young, expanding to broadly rounded or almost plane at maturity, sometimes slightly umbonate, the surface dry and covered by small erect fibrils or scales, dark violet, the surface shiny metallic when slightly dry. *Gills:* Attached to the stem or partially attached, broad, of the same colour as the cap when young, the colour partially obscured by the spores with age. *Flesh:* Firm, thick, from light to dark violet, the odour and taste mild. *Stem:* 3–5 inches long, ½–1 inch thick, often with a swollen base, narrowing upwards, of the same colour as the cap, silky above, often with a few filaments of the cortina adhering. *Spore Print:* Rusty cinnamon.

HABITAT.—Singly or in small groups on the ground in coniferous woods.

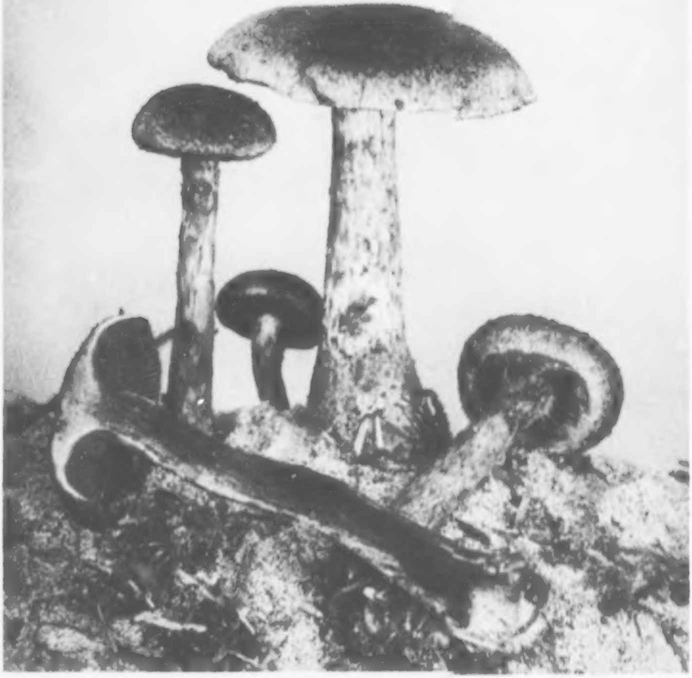
SEASON.—Late summer and fall.

EDIBILITY.—Edible and of good quality.



Bandoni.

Red-gilled cortinarius (*Cortinarius semisanguineus*).



Todd.

Violet cortinarius (*Cortinarius violaceus*).

COMMENTS.—The deep violet fruiting bodies of this species usually occur in virgin forest. Once recognized, it cannot be mistaken for any other species in this region. Because of its unusual colour, many collectors are doubtful about the edibility of this species. However, those who have tried it maintain that it is equal in flavour to the field mushroom and similar forms.

Inocybe geophylla **White Inocybe**

DESCRIPTION.—*Cap:* Up to 1½ inches broad, conical with incurved margin when young, becoming bell-shaped and expanding to nearly plane with a small umbo at the centre, splitting readily on the margin at maturity; dry, with a silky sheen, white to pale tan. *Gills:* Broadly or narrowly joined to the stem, close, rather broad, white, becoming grey then brown. *Flesh:* Thin white. *Stem:* Up to 2 inches long, ⅛–3/16 inch thick, cylindric, solid, silky, delicately hairy at the top, white. *Spore Print:* Rusty brown.

HABITAT.—Singly or in small groups on the ground in open coniferous or mixed forest, sometimes on lawns under mature conifers.

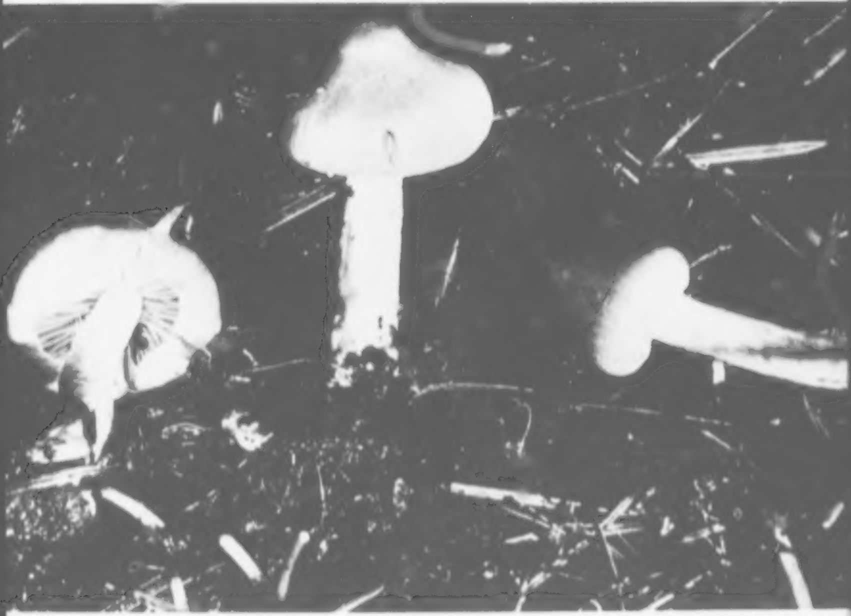
SEASON.—Fall through early winter.

EDIBILITY.—To be avoided (edibility not established).

COMMENTS.—The genus *Inocybe* consists of a large number of species of rather small mushrooms which are difficult to identify. As many of the species are poisonous, beginners should avoid the entire genus. It is characterized by the conical to campanulate cap, often with a sharp umbo, and the ochre-brown spore prints.

Paxillus involutus **Inrolled Paxillus, Brown Chanterelle**

DESCRIPTION.—*Cap:* Up to 8 inches broad, convex with the margin strongly inrolled at first, expanding and centrally depressed at maturity; dull ochraceous brown to olive brown or with darker spots, downy when young, becoming smooth. *Gills:* Running down the stem, close, broad, occasionally forked, forming a net-like zone on the stem, easily separating from the cap; yellow, becoming reddish-brown when cut. *Stem:* Up to 3 inches long and



Bandoni.

White inocybe (*Inocybe geophylla*).

Calverley.

Inrolled paxillus (*Paxillus involutus*).

1 inch thick, slightly tapering downward, smooth, solid, of the same colour as the cap or lighter. *Spore Print:* Ochre brown.

HABITAT.—Solitary or in groups on ground in coniferous or mixed forest, often at the base of old stumps.

SEASON.—Spring to late fall.

EDIBILITY.—Edible but not recommended.

COMMENTS.—One of the commonest mushrooms in our wooded areas. It is easily recognized by its inrolled margin, its gills which separate easily from the cap, and the colour change on bruising. Most authors list it as an edible species, but records of poisoning are reported from Europe. A buff-coloured form occurs in the spring. It is downier than the fall form but like it in all other respects.

Phæolepiota aurea **Golden Phæolepiota**

SYNONYM.—*Pholiota aurea.*

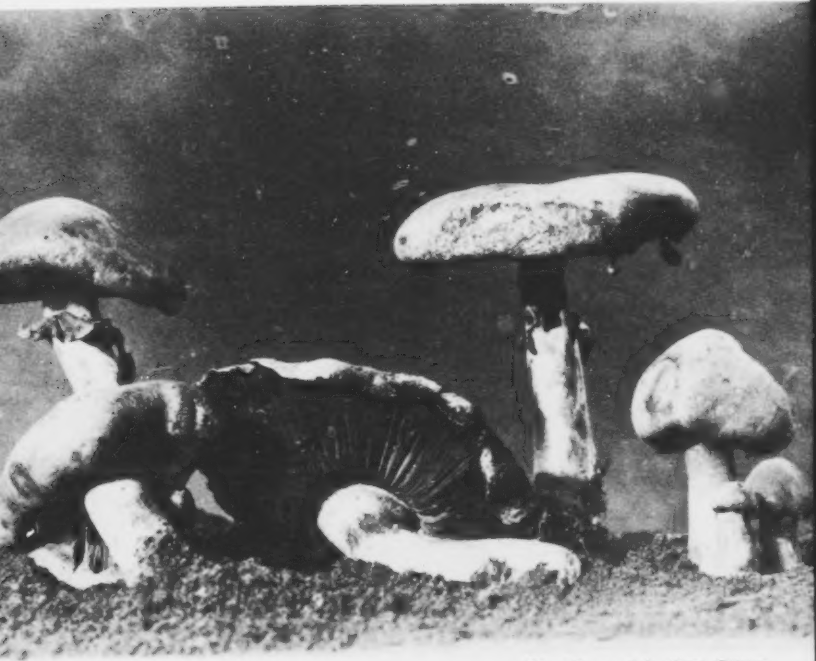
DESCRIPTION.—*Cap:* Up to 8 inches broad, fleshy, convex at first then plane or slightly umbonate, margin prominently incurved in the early stage of development, often with fragments of the veil attached to it in later stages, light gold to leather brown, dry with a powdery covering which easily rubs off. *Gills:* Partially attached to the stem, broad, crowded, pale yellowish at first, darkening to ochraceous buff. *Flesh:* Thick, yellowish, odour pleasant and taste mild. *Stem:* Up to 6 inches long and ¾ inch thick, stuffed, fibrous, slightly enlarged at the base, pale above and of the same colour as the cap below the ring, covered by a powdery coating as with the cap. *Ring:* Conspicuous, membranous, pendulous, disappearing in old specimens. *Spore Print:* Pale ochre.

HABITAT.—Solitary or in groups on ground. Often associated with alder or vine maple.

SEASON.—Fall.

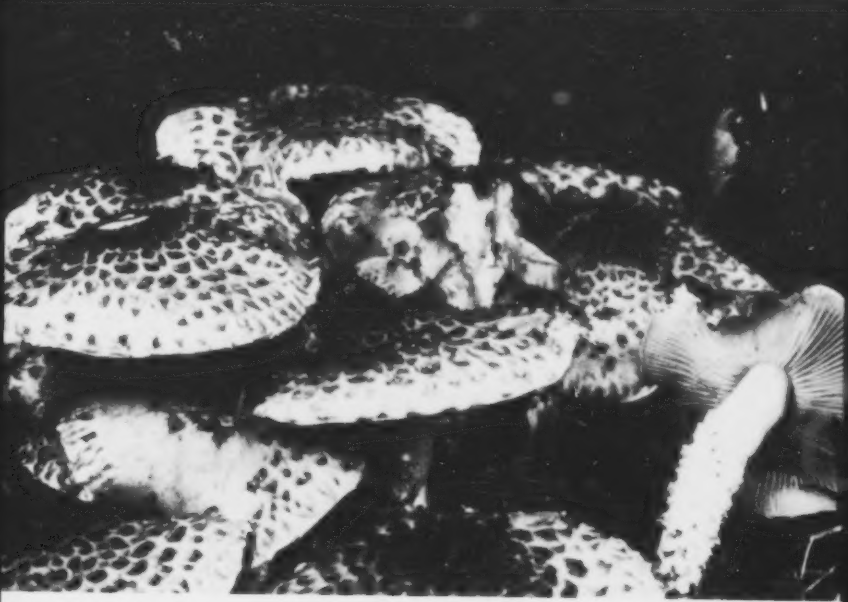
EDIBILITY.—Edible.

COMMENTS. — This species is of striking colour and often reaches a large size. The finely powdery coating, which easily rubs off when dry, is an important field characteristic. The golden phæolepiota is palatable and should be used when in the young stage. Only the caps should be used.



Plant Research Institute, Ottawa.

Golden phæolepiota (*Phæolepiota aurea*).



McKenny.

Rough pholiota (*Pholiota squarrosa*).

Pholiota squarrosa **Rough Pholiota, Scaly Pholiota**

DESCRIPTION.—*Cap:* Up to 4½ inches broad, convex with an inrolled margin when young, then rounded or with a raised umbo at the centre; yellowish-brown or with a faintly greenish colour near the margin; scaly, the scales flat, brownish. *Gills:* Attached to the stem, crowded, narrow, pale yellowish at first, then greenish-yellow, finally rusty brown. *Flesh:* Pale yellowish, the odour and taste mild. *Stem:* Up to 5 inches long, about ¼–½ inch thick, cylindric or sometimes slightly tapering downward, solid, similar to the cap in colour and covered below the ring by tawny scales, smooth above the ring. *Ring:* Often disappearing, sometimes present and membranous. *Spore Print:* Rusty brown.

HABITAT.—In dense clusters on stumps and logs.

SEASON.—Summer to early winter.

EDIBILITY.—Edible.

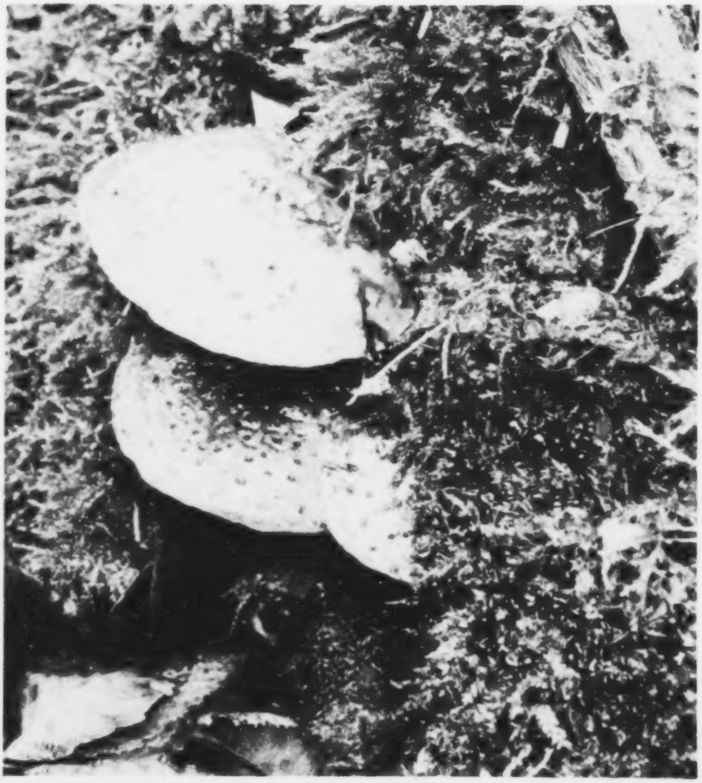
COMMENTS.—The rough pholiota is a showy mushroom growing in large clusters and found on both conifers and hardwoods. The tawny recurved scales, dry cap, and yellow colour distinguish this from closely related pholiotas. It is considered edible when young, but older specimens have a disagreeable flavour.

Pholiota squarrosoides differs in having a viscid cap that is usually smaller and whitish between the tawny, erect, coarse scales. In addition, the gills are whitish, changing to rusty brown. It grows in clumps on wood of hardwoods, especially alder, and is edible when young. *Pholiota squarroso-adiposa* also occurs in British Columbia and in the same habitat. It has a viscid yellow cap covered by rather small brown scales. The gills are pale yellow at first then change to rust colour. It is edible, but the quality is said to be inferior.

GROUP IV
(SPORES CHOCOLATE BROWN TO PURPLE-BROWN)

KEY TO GENERA

1. Ring present 2
1. Ring lacking 3



Todd.

Pholiota squarrosa-adiposa.

2. Gills free; cap surface dry; ring large, pendulous; stem easily separable from cap .... *Agaricus*
2. Gills attached; cap viscid or glutinous; ring small, sometimes disappearing at maturity; stem not readily separating .... *Stropharia*

3. Margin of young cap appressed, the cap often broadly conic at maturity .... *Psathyra* (*Psathyrella*)*
3. Margin of young cap incurved or inrolled, the mature cap typically convex 4
4. Occurring on dung, mosses, soil in pastures, or, less commonly, on decaying wood; mostly brown in colour though some are green or bluish or they may develop these colours upon bruising .... *Psilocybe*
4. Occurring on wood (frequently on buried roots) or on peat; our common species pale to bright yellow or ochre yellow, often orangish on the disk .... *Næmatoloma*

GENUS *AGARICUS*

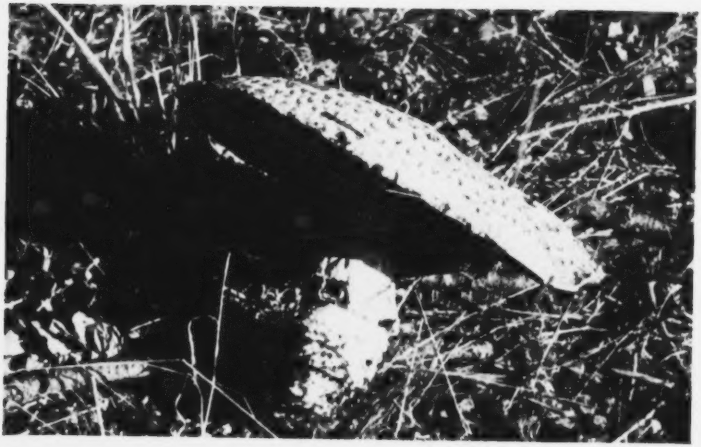
This genus includes the common meadow mushroom (*Agaricus campestris*), the market mushroom (*Agaricus bisporus*), and related species. The distinguishing features of the genus are the purple-brown spores, free gills, a conspicuous ring, and a stem that separates cleanly and easily from the cap. The species of *Agaricus* lack a volva, a characteristic which should always be carefully checked in order to avoid confusion with the amanitas. The gills of most species are pale pinkish or reddish when young and change to dark brown or almost black with age; they are free from the stem. All of the species grow upon the ground.

Most of the species of *Agaricus* are edible and of excellent flavour. However, a few species may cause indigestion or very mild poisoning to some individuals.

Agaricus augustus **Giant Agaric, The Prince**

SYNONYM.—*Psalliota augusta*

DESCRIPTION.—*Cap:* Up to 16 inches broad, rounded at first, becoming plane, fleshy, cream-white, light tan to pale brown, covered with close-pressed pale-brown to dark-brown scales arranged in circular rows, more crowded towards the centre than at the margin. *Gills:* Free from the stem, crowded, rather narrow, white, becoming pinkish then dark brown with a paler edge, covered in young stage by a thick white membranous veil. *Flesh:* Thick,



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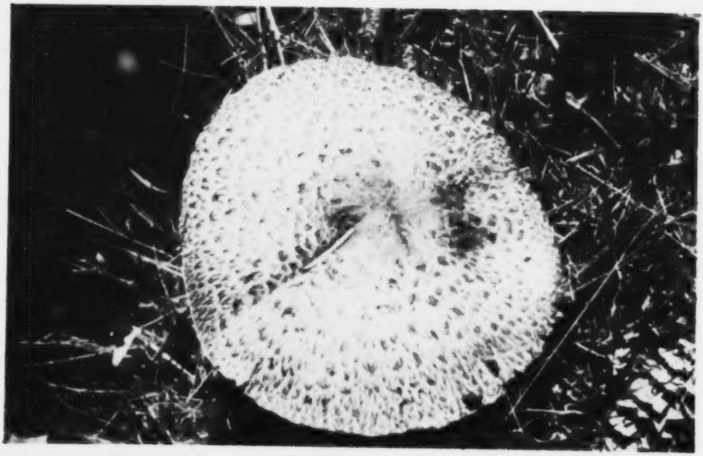


Underhill.

Giant agaric (*Agaricus augustus*).

white, or yellowish, odour and taste pleasantly aromatic. *Stem:* Up to 5 inches long, ¾–1½ inches, cylindrical or slightly enlarged at the base, hollow, cream-white shaded with brown, becoming yellow to rusty brown in old specimens, the part below the ring covered with scales similar to those on the cap, smooth above the ring. *Ring:* Pendulous, skirt-like, double, whitish. *Spore Print:* purple-brown.

HABITAT.—On the ground in open areas, on compost heaps, or in flower-beds rich in organic material.

SEASON.—Late summer and fall.

EDIBILITY.—Edible and very good.

COMMENTS.—One of the larger species of fleshy fungi, and well-named giant agaric. This is one of the most desirable of edible mushrooms, having an excellent meaty flavour.

Agaricus campestris **Meadow Mushroom**

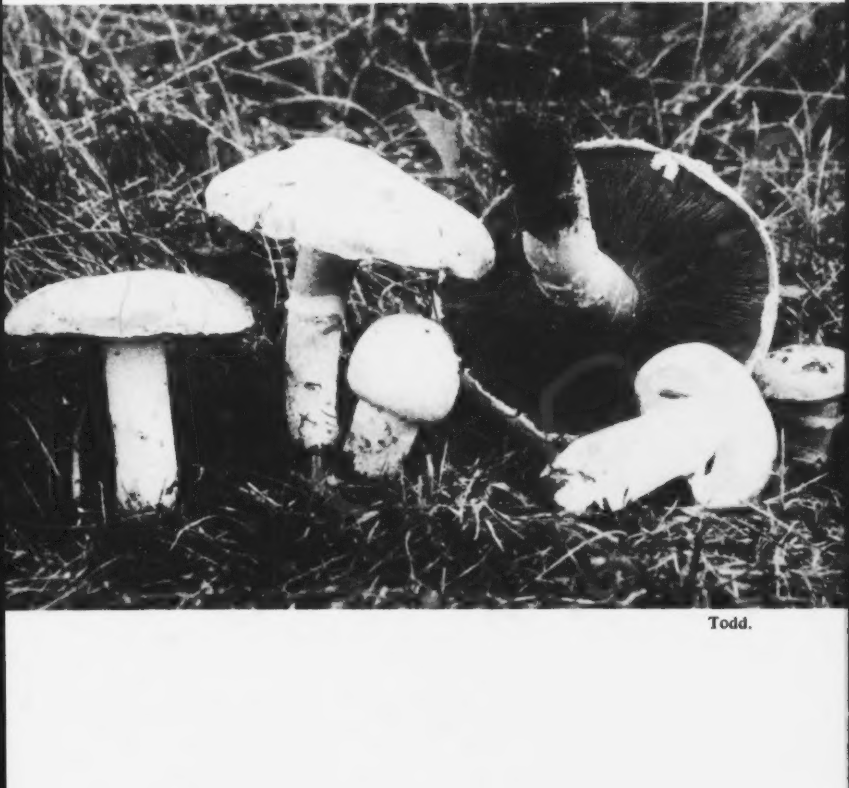
DESCRIPTION.—*Cap:* Up to 5 inches broad, almost globose at first, becoming rounded or plane, fleshy, white and silky in young specimens, frequently brownish and sometimes covered by small scales when older, the margin often with fragments of the partial veil. *Gills:* Free from the stem, close, pale pinkish turning bright pink and finally dark brown to almost black. *Flesh:* White, firm, the odour and taste mild. *Stem:* Up to 2 inches long, about ½ inch thick, cylindric or tapering downwards, smooth, white, turning pale brownish below the ring. *Ring:* Thin, single, membranous, sometimes adhering to the cap margin. *Spore Print:* Purple-brown.

HABITAT.—Solitary or in groups on lawns, grassy fields, or pastures.

SEASON.—Late summer and fall.

EDIBILITY.—Edible, choice.

COMMENTS.—It was long thought that the commercially grown mushroom was a variety of this species. However, it is now given specific status under the name *A. bisporus.* The two species are similar in all external characteristics, and they can be distinguished only by microscopic examination. *A. arvensis,* the field mushroom or horse mushroom, is of similar appearance and grows in the same



Todd.

Meadow mushroom (*Agaricus campestris*).

habitat. It is larger than *A. campestris* and differs in certain microscopic features. All three of these species are choice edible forms. *A. edulis*, better known in North America as *A. rodmani*, is white with prominent double ring and very firm flesh and is often mistaken for *A. campestris*.

Agaricus placomyces **Flat-top Agaric**

DESCRIPTION.—*Cap:* About 6 inches broad, convex, becoming flat, occasionally with a small central umbo, fleshy, whitish beneath the small flat grey-brown to blackish scales or sometimes smooth and uniformly grey-brown. *Gills:* Free from the stem, crowded, rather narrow, whitish at first, changing to pale pink and eventually purple-brown to almost black, covered in early stage by membranous veil. *Flesh:* White, often becoming pinkish in age, sometimes with an odour of carbolic acid or creosote. *Stem:* Up to 5 inches long, about ½–1 inch thick, enlarged at the base, smooth, silky, stuffed at first, becoming hollow at maturity, whitish, sometimes yellowish toward the base. *Ring:* Prominent, double. *Spore Print:* Chocolate brown.

HABITAT.—Solitary or scattered on ground, on lawns, in gardens, occasionally on the edges of forests.

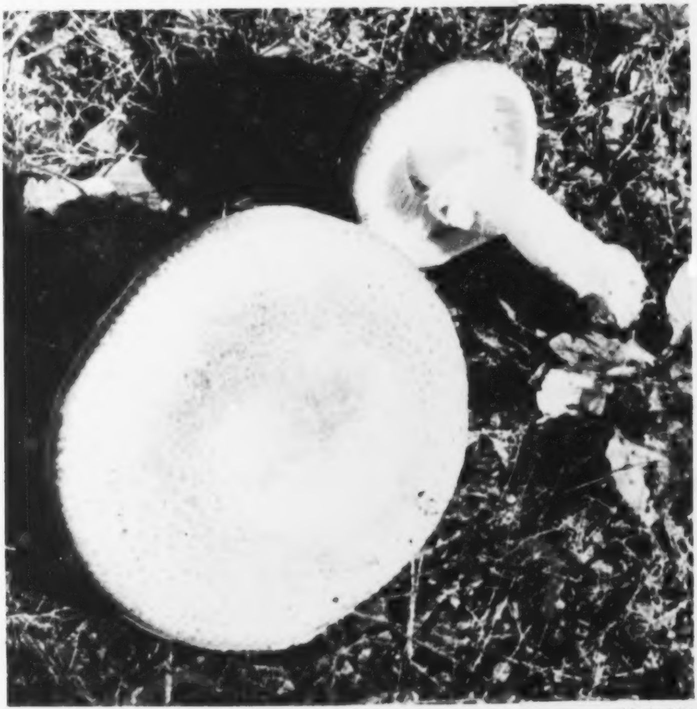
SEASON.—Late summer and fall, sometimes in spring.

EDIBILITY.—Edible, but use caution.

COMMENTS.—Most people find this mushroom to be perfectly edible, but some have become ill after eating it. It is not yet known with certainty if this is caused by a variant with poisonous properties or if the reaction is confined to allergic individuals. Some specimens have a carbolic acid odour which becomes pronounced in cooking. Such specimens should be discarded as known cases of poisoning were thought to be caused by specimens with this odour.

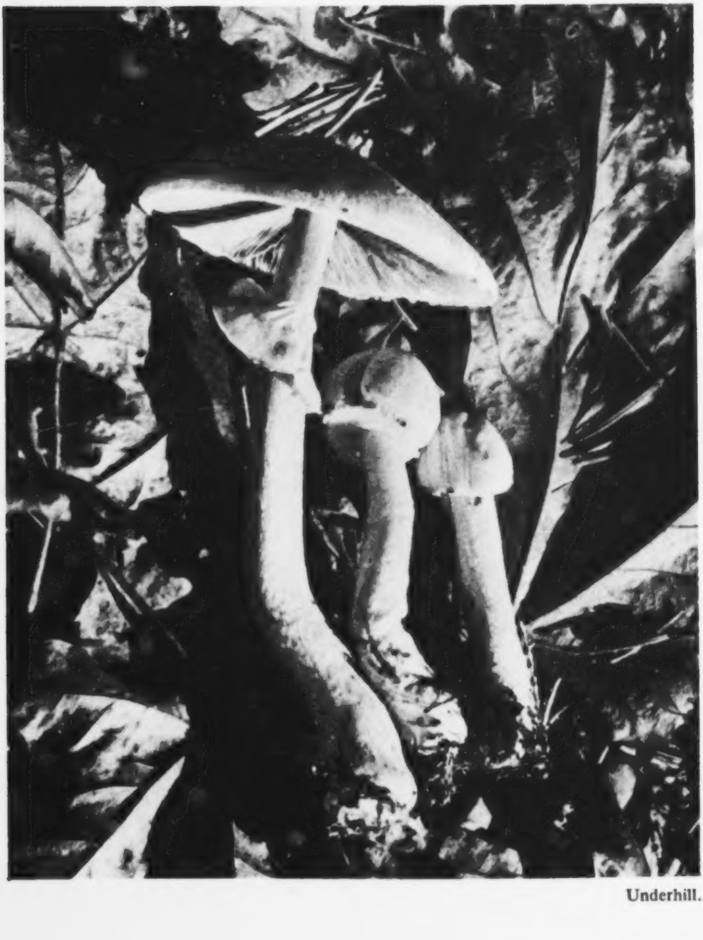
Agaricus silvicola **Forest Agaric, Woodland Mushroom**

DESCRIPTION.—*Cap:* Up to 8 inches broad, rounded at first, expanding to plane, fleshy, white or cream colour, yellowish at the centre and staining yellow when bruised; smooth, silky, or sometimes with a few scales. *Gills:* Free from the stem, crowded,



Underhill.

Flat-top agaric (*Agaricus placomyces*).



Underhill.

Forest agaric (*Agaricus silvicola*).

whitish in early stages, then pinkish and finally chocolate brown or blackish-brown when old. *Flesh:* Brittle, white, becoming yellow when bruised; odour and taste mild. *Stem:* Up to 6 inches long and 1 inch thick, cylindric or slightly tapering upward, sometimes abruptly swollen at the base; white, smooth, becoming hollow, staining yellow when bruised. *Ring:* Prominent, double, white, smooth. *Spore Print:* Purple-brown.

HABITAT.—Single or in groups on humus in coniferous forests, especially of spruce and Douglas fir.

SEASON.—Fall, occasionally in spring and summer.

EDIBILITY.—Edible, but disagreeable for some.

COMMENTS.—The forest agaric is sometimes confused with the field mushroom (*A. arvensis*), but its habitat, double membranous ring, and tendency to stain yellow help to distinguish it from that species.

Næmatoloma capnoides **Smoky-gilled Næmatoloma**

SYNONYN.—*Hypholoma capnoides.*

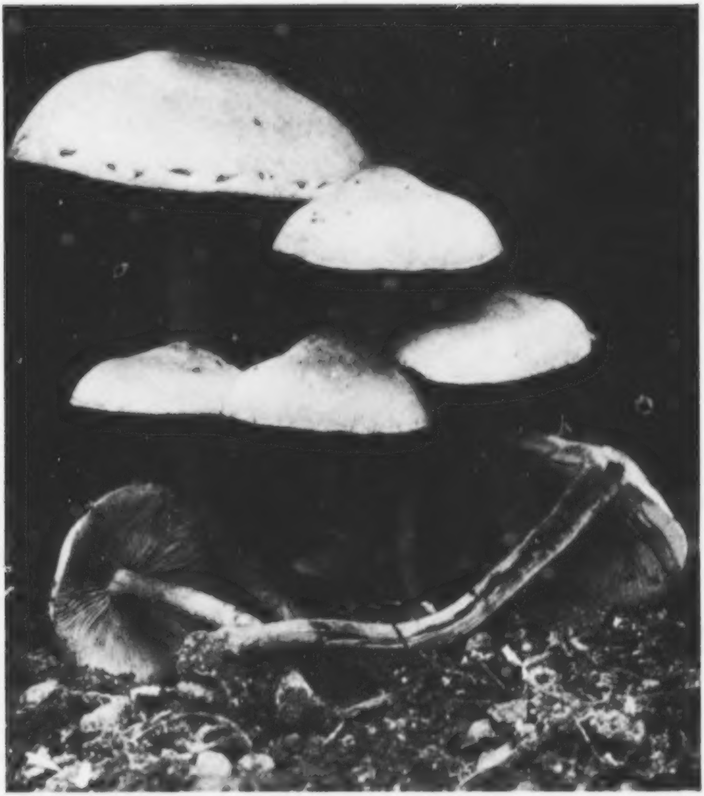
DESCRIPTION.—*Cap:* Up to 2½ inches broad, convex when young, the margin inrolled, becoming plane or slightly umbonate, smooth, brownish-orange to brownish-yellow, paler on the margin. *Gills:* Attached to the stem, close, whitish at first, becoming smoky purplish-brown. *Flesh:* White or whitish, firm, with a mild taste and the odour not distinctive. *Stem:* Up to 3 inches long, less than ¼ inch thick, cylindric or with a slightly swollen base, smooth but with a hairy base, hollow, whitish at the top, tan at the base, becoming darker from the base up with age. *Ring:* Lacking, but a faintly visible circle may mark the veil attachment point; patches of the veil often are present on the cap margin of younger specimens. *Spore Print:* Purple-brown.

HABITAT.—In dense clusters on wood of conifers.

SEASON.—Fall.

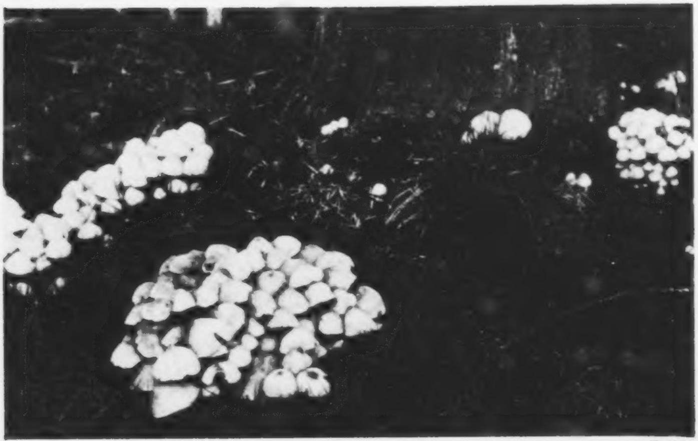
EDIBILITY.—Edible, good.

COMMENTS.—This species is slightly smaller than *N. fasciculare;* the cap is more orange and the gills do not become greenish as in that species. In addition, it lacks the very bitter flavour characteristic of the sulphur top.



Todd.

Smoky-gilled næmatoloma (*Næmatoloma capnoides*).



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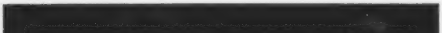


Todd.

Bitter næmatoloma (*Næmatoloma fasciculare*).

Næmatoloma fasciculare **Bitter Næmatoloma, Sulphur Top**

DESCRIPTION.—*Cap:* Up to 3 inches broad, blunt-conic or bell-shaped when young, the margin incurved, expanding to umbonate or almost plane at maturity, the surface smooth, slippery but not viscid when wet, the margin of young caps bearing fragments of the veil; the colour at first bright orange-yellow to greenish-yellow, frequently water-soaked in age and the colour then dull olive. *Gills:* Crowded, attached to the stem but breaking away from it; yellow, then greenish and finally olive-coloured. *Flesh:* Thin, yellowish, changing to brownish when cut, without a distinctive odour but with an extremely bitter taste. *Stem:* Up to 4½ inches long, about ¼ inch thick, slightly tapered downwards, hollow, colour as in the cap at first but becoming brownish from the base upward. *Ring:* Lacking, but a faintly visible circle may mark the point of attachment of the veil on the stem. *Spore Print:* Purplish-brown.

HABITAT.—Usually in dense clusters on logs or stumps, or growing from buried wood.

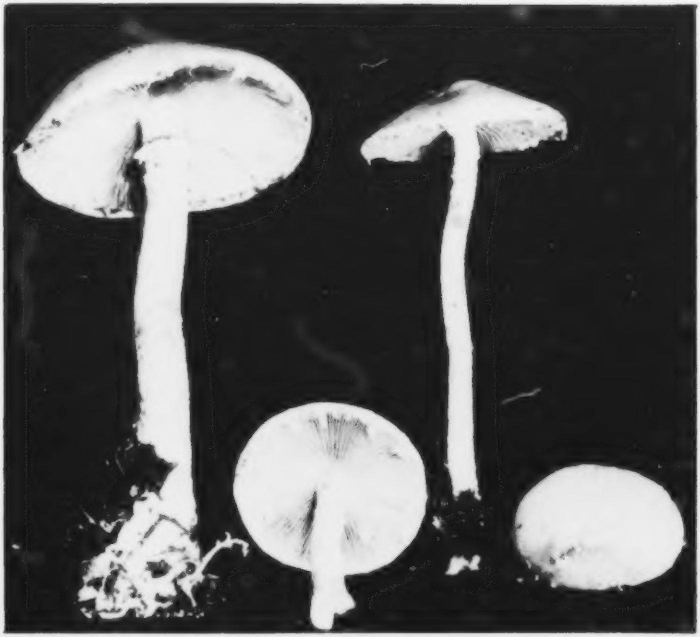
SEASON.—Summer to early winter.

EDIBILITY.—Probably edible, but according to most reports not palatable.

COMMENTS.—This is a very common mushroom in both wooded and cleared areas. It grows on both conifers and hardwoods and occasionally is found on the exposed heartwood of living trees. According to McIlvaine (1900), the bitter taste disappears upon cooking, but other authors say that this is not so.

Stropharia ambigua **Questionable Stropharia**

DESCRIPTION.—*Cap:* Up to 4 inches broad, rounded at first, expanding and flat or with a small umbo at maturity, usually yellow, ochre or yellowish-brown when young, pale yellowish or yellowish-brown at maturity and fading with age, the surface viscid, sometimes with a few cottony patches near the edge, the margin bearing fragments of the partial veil. *Gills:* Attached to the stem, close,



Stuntz.

Questionable stropharia (*Stropharia ambigua*).

with an uneven edge, whitish at first, changing to greyish and finally dark purplish-brown as the spores mature. *Flesh:* Whitish with a mild taste and odour. *Stem:* Up to 5 inches long and ½ inch thick, cylindric or slightly swollen at the base, covered by the white cottony veil remnants below the ring, but these disappearing and leaving the stem smooth, pale yellowish, hollow. *Ring:* Sometimes poorly formed or lacking completely, the veil adhering to the cap margin rather than the stem, white, soft and cottony when present. *Spore Print:* Purple-brown.

HABITAT.—Usually in groups, sometimes singly, on the ground in coniferous or mixed forest, or on the margins of such forests.

SEASON.—Summer to late fall, sometimes spring.

EDIBILITY.—Edible but not choice.

COMMENTS.—The cottony veil remnants remaining on the stem and on the margin of the viscid yellow cap are distinctive features of this species. Though edible, the taste is inferior.

A related species, *S. æuginosa,* has a bright bluish-green or greenish layer of slimy material on the surface of the cap. This fades with age, the colour then becoming pale yellowish-brown. *S. æruginosa* also is edible.

GROUP V

(SPORES DARK SMOKY GREY TO BLACK)

KEY TO GENERA

1. Gills running down stem, waxy in texture .... *Gomphidius*
1. Gills attached or free 2
    2. Gills becoming mottled in appearance as spores mature, not dissolving, attached to the stem .... *Paneolus*
    2. Gills, and in some species the cap, dissolving as the spores are shed and forming an inky liquid, the gills free or nearly so .... *Coprinus*

GENUS *COPRINUS*

The inky-caps comprise a group of mushrooms that are easily distinguished from all others. In this genus the cap is converted into an inky-black fluid as the mushroom matures.

As a rule, representatives of this group deteriorate rapidly. They should therefore be gathered when young and used soon after if collected for the table. There are a number of species occurring in British Columbia, but the majority are rather small and difficult to identify. The species most commonly used as a food are discussed here.

It is of interest that the black inky fluid has been suggested as a forgery-proof ink.

Coprinus atramentarius Inky-cap, Inky Coprinus

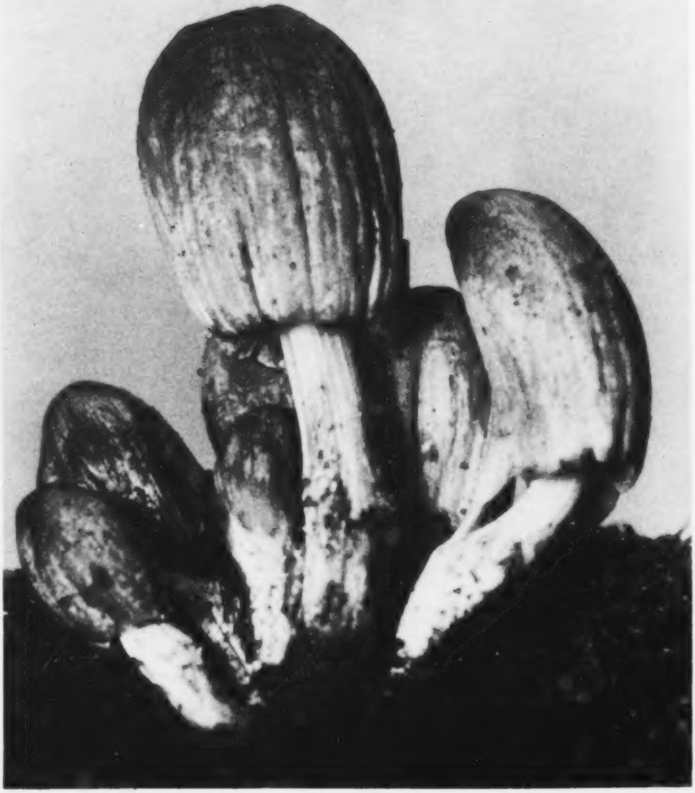
DESCRIPTION.—*Cap:* Up to 3 inches in length, rounded or conical to more or less egg-shaped, expanding to conical and the margin splitting, fleshy, the surface dull grey to greyish-brown, often with a darker umbonate centre, smooth or mealy, sometimes covered with minute scales, even or furrowed. *Gills:* Free from the stem, crowded, greyish-white when young, soon becoming dark grey then black and dissolving into an inky fluid. *Flesh:* Thin, greyish-white, soon liquefying. *Stem:* Up to 5 inches long and ¾ inch thick, with silvery hue, smooth, uniform, hollow, splitting readily. *Ring:* Faint or sometimes conspicuous, near the stem base. *Spore Print:* Black.

HABITAT.—In compact clusters on ground, common in gardens, waste places, road shoulders, often in very poor gravelly soil.

SEASON.—Late summer and fall, less abundant in spring.

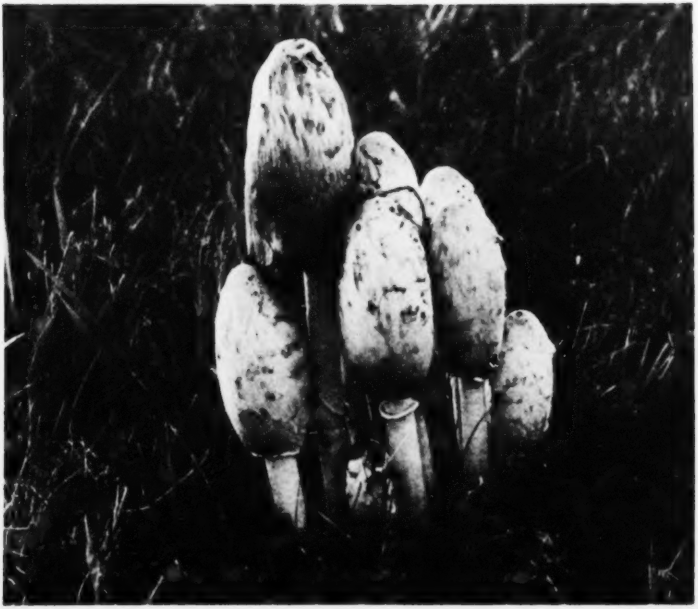
EDIBILITY.—Edible and good. Only young specimens should be eaten.

COMMENTS.—There have been reports of a mild form of poisoning by this species when included in a meal with alcoholic beverages. The symptoms of this type of poisoning were said to be similar to acute alcoholic intoxication. Child (1952) conducted experiments which did not support this supposition. He suggested that the reported cases were not the result of combining inky-caps and alcohol but were due simply to misidentification or involved cases of individual allergy. We consider the inky-caps to be good edible mushrooms and especially suitable for pickling, but they must be collected in the young stages and prepared soon after.



Nicholls.

Inky-cap (*Coprinus atramentarius*).



Waugh.

Shaggy mane (*Coprinus comatus*).

Coprinus comatus **Shaggy Mane**

DESCRIPTION.—*Cap:* Up to 5 inches long, oval, becoming bell-shaped, gradually expanding, covered with large shaggy upturned scales, splitting at the margin, finally deliquescing, white to brownish or grey when young, the colour predominantly white. *Gills:* Free from the stem, thin, very close, white at first, becoming pink then black and finally dissolving with the cap into a black inky fluid. *Flesh:* Thin, fragile, white or pinkish. *Stem:* Up to 12 inches long and 1 inch thick, smooth, brittle, hollow, splitting readily because of its rather fibrous nature, creamy white with lightly attached ring which is movable and often slips to the base of the stem. *Spore Print:* Black.

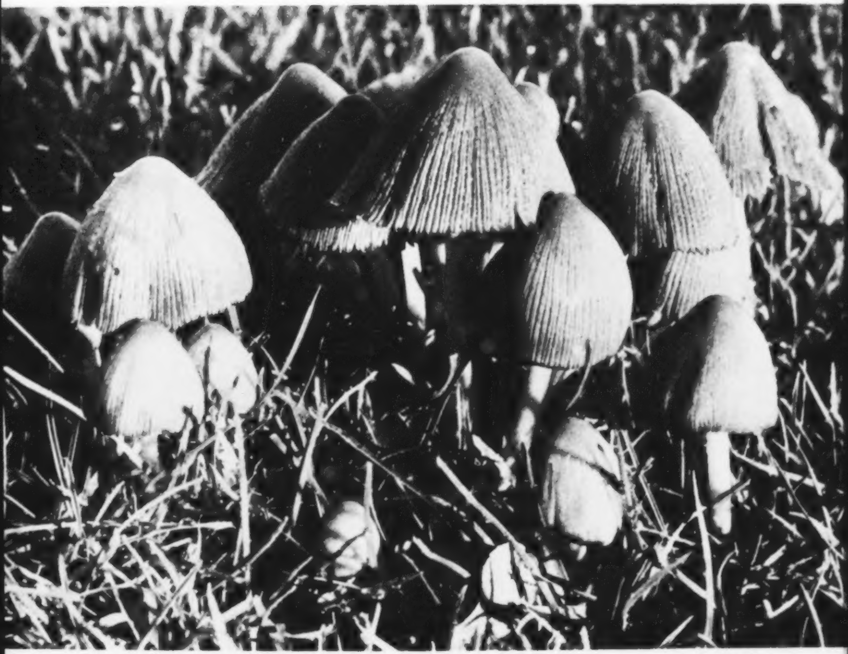
HABITAT.—In clusters on the ground, along roadsides, on compost piles, lawns.

SEASON.—Late summer and fall.

EDIBILITY.—Edible, choice and highly recommended.

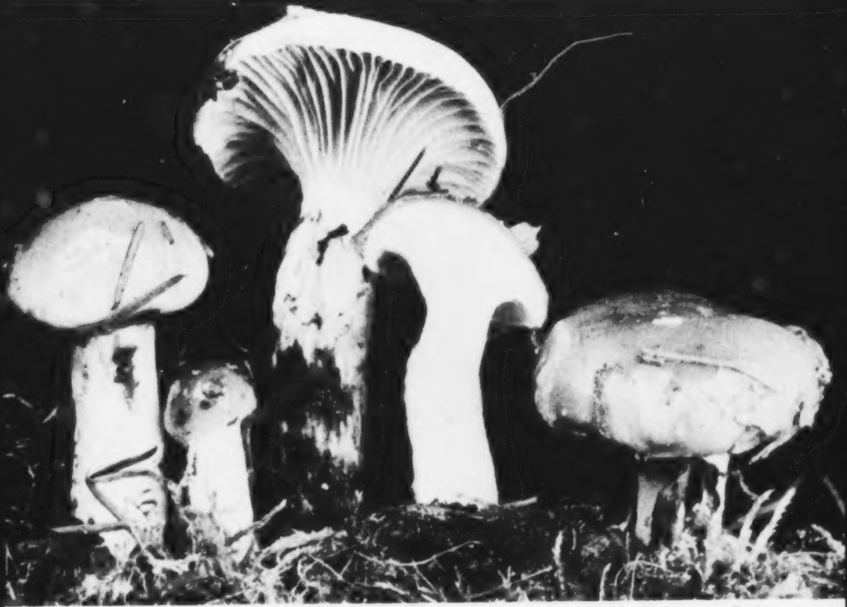
COMMENTS.—The shaggy mane is one of the most easily recognized mushrooms, and there is little danger of it being confused with any other. It appears in small groups or large colonies, and its button stage exerts pressure so great that it can push through hard-packed surfaces such as asphalt driveways and gravel roads. The shaggy mane is a favourite food with connoisseurs, being tasty and easily digested. There are a number of ways to prepare them for the table; e.g., frying, stewing, creaming, or pickling. This mushroom should be collected when the specimens are very young, before the gills start to darken and liquefy.

Coprinus micaceus, commonly known as the glistening inkycap, is a rather small and delicate mushroom, usually appearing in dense clusters on the ground around old stumps, being associated with buried wood. It has a cap which is up to 1 inch broad, oval, tan to ochraceous brown, marked with minute lines or furrows, and covered by mica-like particles. *C. micaceus* is edible and of good flavour.



Bandoni.

Glistening inky-cap (*Coprinus micaceus*).



Todd.

Peg-top gomphidius (*Gomphidius glutinosus*).

Gomphidius glutinosus **Peg-top Gomphidius**

DESCRIPTION.—*Cap:* Up to 4 inches broad or occasionally larger, convex, becoming plane, sometimes slightly depressed in the centre, fleshy, smooth, purplish-brown to greyish-brown with a violet tinge, often spotted black when old or when bruised, with a thick viscid layer, the glutin, which is easily removed in a transparent, rubbery sheet when wet. *Gills:* Running down the stem, widely spaced, soft and waxy in appearance and texture, branched, whitish turning grey then blackish as the spores mature. *Flesh:* Soft, whitish, becoming dirty white with age. *Stem:* Up to 4 inches long and ¾ inch thick, cylindrical or tapering slightly toward the base, white to pale brownish above, conspicuously yellow at the base both internally and externally, with a dark-brown line, the veil remnant close to the base of the gills. *Ring:* Viscid, soon disappearing. *Spore Print:* Smoky grey.

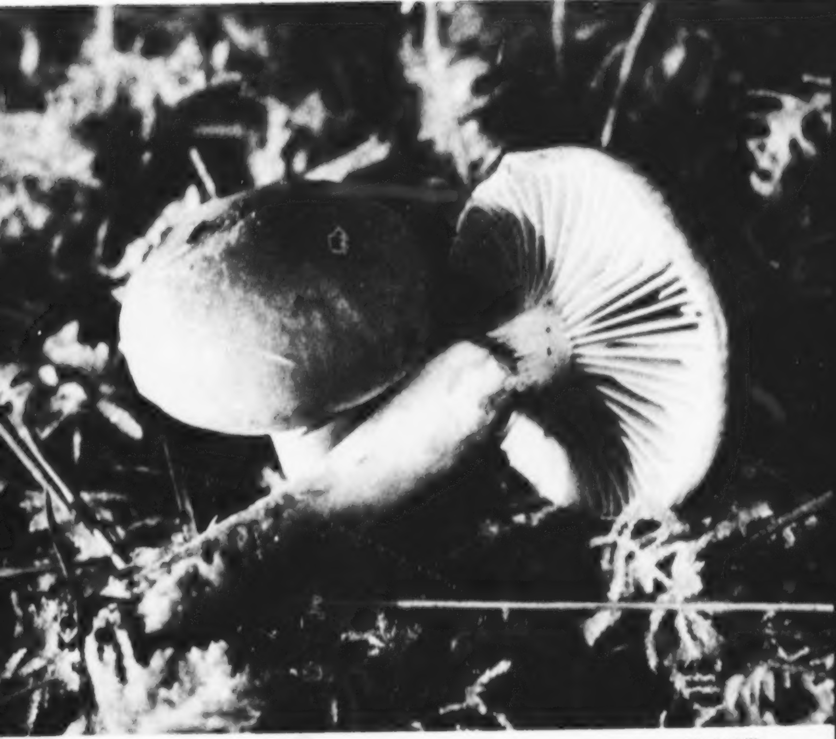
HABITAT.—Usually scattered on ground rich in humus in coniferous forest.

SEASON.—Late summer to fall.

EDIBILITY.—Edible (*see* Comments).

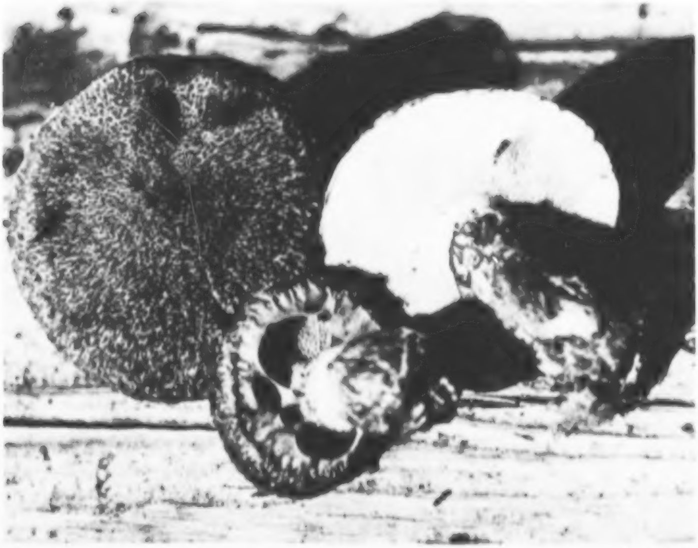
COMMENTS.—The most conspicuous features of this species are its slimy cap, the characteristic ring below the gills, and the distinctly yellow base of the stem. As far as edibility is concerned, there is no positive established opinion. The junior author, who has tried it several times, considers it as a good edible species, suitable for stewing with onion added in a sauce of sour cream. The repulsive glutin can be removed as the mushrooms are collected. For cooking, only the cap and upper portion of the stem should be taken.

A related species, the rosy gomphidius (*G. subroseus*), has a rose-pink cap covered by a thick glutinous layer as in *G. glutinosus.* It is edible and considered choice. *G. tomentosus,* also occurring in British Columbia, lacks the glutinous layer and is of a pale yellow-orange colour. In age, or upon bruising, the colour changes to dark red or purplish. The edibility of this species is not known, and it does not occur in sufficient quantity to be of interest to the mushroom-hunter.



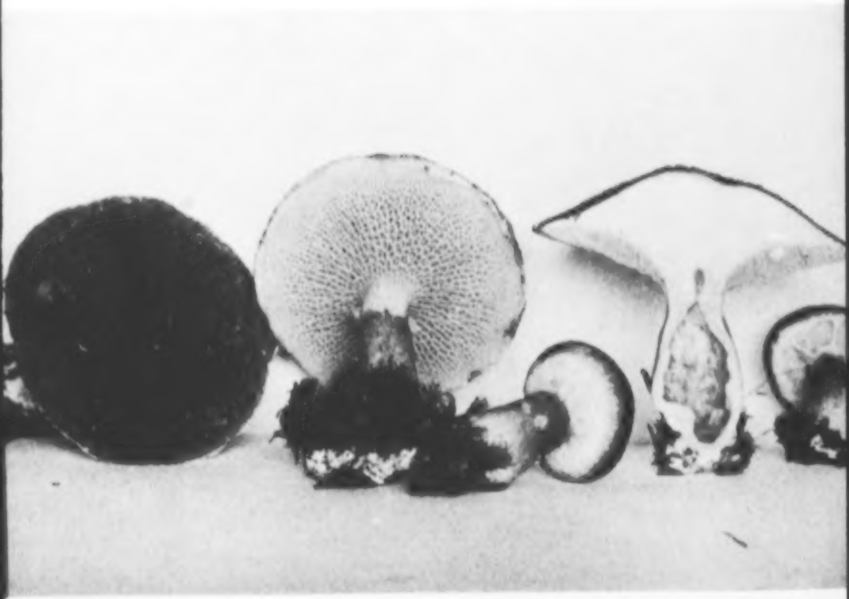
Underhill.

Rosy gomphidius (*Gomphidius subroseus*).



Underhill.

Lake's boletinus (*Boletinus lakei*).



Stuntz.

Hollow-stemmed boletinus (*Boletinus cavipes*).

FLESHY PORE FUNGI (*BOLETES*)

The boletes are fleshy fungi which resemble gilled mushrooms in form. However, the lower surface of the cap bears tubules or " pores " in the place of gills. The spores are produced along the inner surfaces of these tubules. The pore layer separates cleanly and very easily from the cap in *Boletus.* In *Boletinus* the tube layer is firmly attached to the cap.

Many genera of boletes are recognized at the present time. Since a number of these can be distinguished from one another only on the basis of microscopic characteristics, we have retained the name *Boletus* for most of those included here.

Boletes are among the finest of edible mushrooms. However, a few species are known to be poisonous. All species with red pore mouths and those which quickly turn blue when cut are to be avoided. Although this will exclude some good edible species, it allows the novice to make use of many edible species without fear.

Boletinus cavipes **Hollow-stemmed Boletinus**

DESCRIPTION.—*Cap:* Up to 7 (–9) inches broad, convex, sometimes slightly umbonate, the surface fibrillose-scaly, dark reddish-brown to yellowish-brown. *Tubes:* Angular, bright sulphur yellow when young, becoming dull dirty yellow in age, adhering to the stem and running down it. *Flesh:* Firm, pale yellow, the taste mealy or slightly bitter, odour not distinctive. *Stem:* Up to 4 inches long, ½–1½ inches thick, swollen at the base and tapering upwards, fibrillose-scaly below the ring and coloured like the cap, yellow above the ring, the swollen basal portion becoming hollow at maturity. *Ring:* Delicate, white at first, becoming yellowish. *Spore Print:* Yellowish.

HABITAT.—Singly or in groups, usually associated with larch or pine.

SEASON.—Fall.

EDIBILITY.—Edible.

COMMENTS: This is the only species of *Boletinus* with a hollow stem.

Boletinus lakei **Lake's Boletinus**

DESCRIPTION.—*Cap:* Up to 6 inches broad, convex becoming plane, fleshy, rather dry, yellowish to reddish-brown, fading with age, covered with appressed hairs or minute tufted scales in the centre, the yellowish flesh visible between the scales. *Tubes:* Coarse, bright yellow, stained brownish when bruised, covered by veil in young specimens. *Flesh:* Thick, yellow, unchanging in colour when bruised or broken, without any special taste or odour.

Stem: Up to 3 inches long, ½–1 inch thick, yellow sometimes with reddish streaks, solid and yellow within. *Ring:* Delicate, soon disappearing. *Spore Print:* Olive yellow.

HABITAT.—Solitary or in groups on ground in young coniferous forest or grassy parkland.

SEASON.—Late summer and fall.

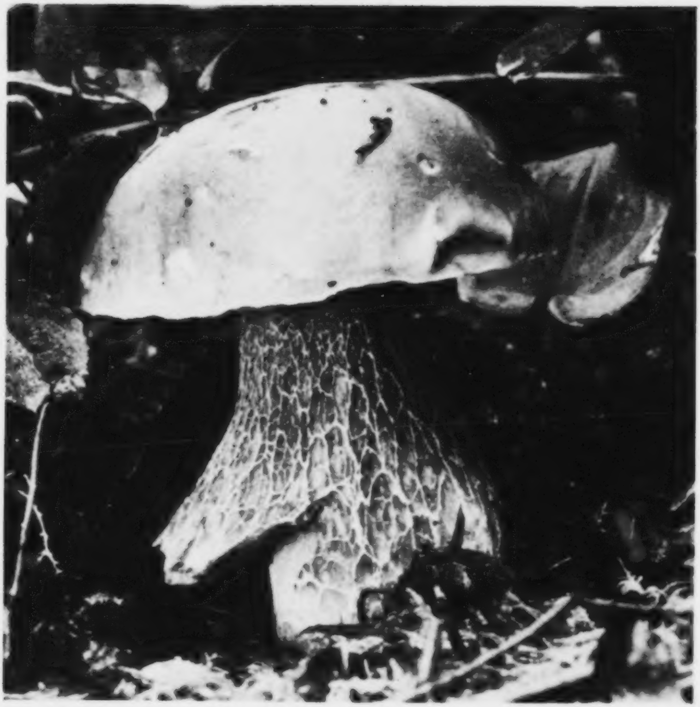
EDIBILITY.—Edible and good to some, inferior in taste to others.

COMMENTS.—Lake's boletus is a western species and is one of the first fleshy fungi to appear in quantity after the onset of the fall rains.

It occurs in abundance in coastal areas, especially in the vicinity of Victoria and the west coast of Vancouver Island. It is easy to recognize by the fact that its cap is covered by distinctive reddish-brown tufted scales.

Boletus edulis **King Boletus, Edible Boletus**

DESCRIPTION.—*Cap:* Up to 12 inches broad, hemispherical when young, becoming rounded to almost plane, fleshy, smooth, dry to slightly viscid when moist, with a wide range of colours from creamy brown to dark chestnut, often paler at the margin. *Tubes:* Round in shape, very small, narrowly joined to the stem (adnexed) to almost free, white at first changing to greenish-yellow when mature, staining dirty tawny when bruised. *Flesh:* Thick, white, not changing colour when bruised or broken; taste and odour pleasant. *Stem:* Up to 8 inches long, solid, usually enlarged at the base to as much as 2½ inches and gradually tapering upwards, whitish, creamy, or brownish, characteristically reticulated, especially on the upper portion of the stem. *Spore Print:* Olive brown.



Waugh.

King boletus (*Boletus edulis*).

HABITAT.—Solitary or in scattered groups on the ground, in open woodlands, or on grassy edges of forests.

SEASON.—Summer and fall.

EDIBILITY.—Edible and choice.

COMMENTS.—One of the largest of our fleshy fungi, recognized by its brownish smooth cap, whitish reticulate stem, and white tubes which turn greenish-yellow. The king boletus is a variable species, and a number of varieties are recognized by some mycologists.

It is one of the best-known edible species in Europe, where it has many common names (cepe, ceps, steinpilz, borovic, etc.). In Eastern Europe, where this mushroom is very abundant, it is gathered and dried for export. Canada and the United States are importers of dried *B. edulis* and products prepared from it; few people are aware that this is a common mushroom in British Columbia.

Boletus luteus **Yellow-brown Boletus, Brown-ring Boletus**

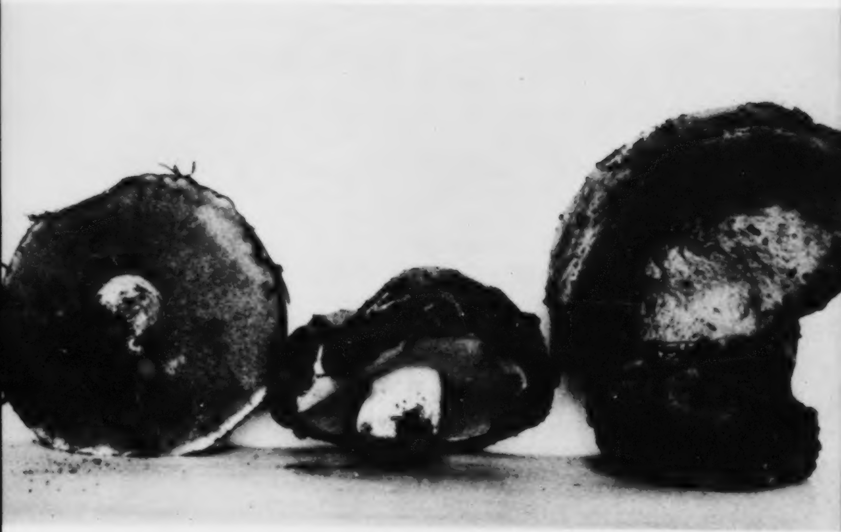
DESCRIPTION.—*Cap:* Up to 5 inches broad, rounded, fleshy, yellow-brown to chocolate, often with violet tints, very viscid in damp weather, the surface layer thick and easily removed. *Tubes:* Short with small opening, irregular, angular, pale yellow becoming yellowish-brown; young caps covered by a prominent sticky veil that remains as a ring on the stem. *Flesh:* Thick, soft, creamy white to yellowish, not changing colour when bruised or cut, taste and odour mild. *Stem:* Up to 4 inches long, ½ inch or more thick, cylindrical, solid, cream to yellow with characteristic granulation above the ring. *Spore Print:* Brown.

HABITAT.—Solitary or in scattered groups in secondary coniferous forest, coniferous grassy parkland, and edges of forest.

SEASON.—Fall.

EDIBILITY.—A good edible species.

COMMENTS.—The yellow-brown boletus is characterized by a slimy cap and veil covering the tubes of young specimens. The ring is whitish and changes with age to brown, giving it the name brown-ring boletus. It is very common in British Columbia.



Stuntz.

Granulated boletus (*Boletus granulatus*).

The closely related *B. granulatus* differs from *B. luteus* by the fact that its veil is only rudimentary or totally lacking, and therefore no ring is present. *B. granulatus* is also a good edible species, and it is found on the west coast of Vancouver Island associated with jack pine and Sitka spruce.

Both these species are found in the Vancouver area. *B. granulatus* often grows in dense carpets of hairy-cap moss (*Polytrichum*) and resembles a number of brownish balls as its height is not as great as that of the moss. The unexpanded cap is almost globose.

Boletus mirabilis **Admirable Boletus**

DESCRIPTION.—*Cap:* Up to 6 inches broad, convex, fleshy, the surface roughened, slippery when wet but not viscid, red or brownish-red. *Tubes:* Pale yellowish at first, then greenish-yellow, mustard yellow when bruised. *Flesh:* Pale purplish, firm, thick, not changing colour upon bruising. *Stem:* Up to 5 inches long, usually thickest at the base and tapering upwards, up to 2 inches thick below and 1 inch above, often roughened, pitted, and with a network of lines near the top, of about the colour of the cap, often bruising to a darker reddish-brown near the base, solid, the flesh pale purplish at the top, yellowish below. *Spore Print:* Olive brown.

HABITAT.—Usually single or sometimes in small groups on badly decayed conifer logs, especially of hemlock; sometimes on soil covered by a deep layer of humus.

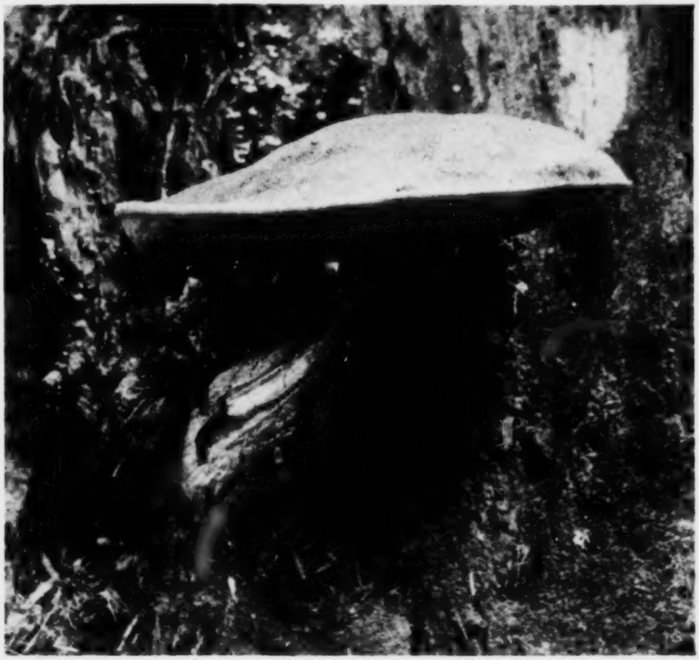
SEASON.—Fall.

EDIBILITY.—Edible, choice.

COMMENTS.—The admirable boletus is distinguished by the colour and texture of the cap and by the habitat. Most of our boletes are found only on the soil, although *B. zelleri* sometimes is found on old decayed logs.

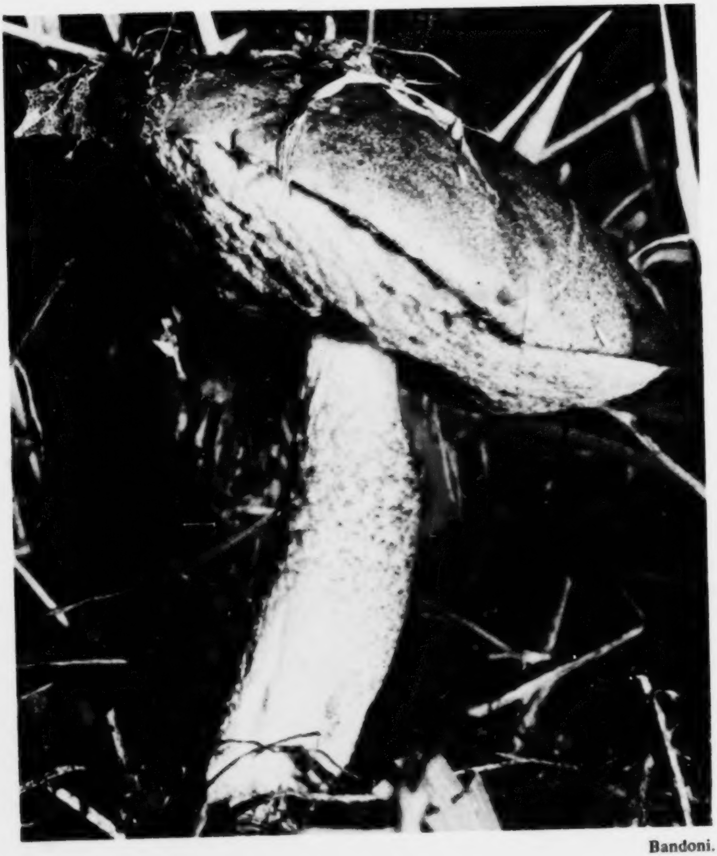
Boletus scaber **Rough-stem Boletus**

DESCRIPTION.—*Cap:* Up to 10 inches broad, rounded at first, becoming almost flat, fleshy, from tan through various shades of brown to reddish or almost blackish brown, sometimes slightly



Todd.

Admirable boletus (*Boletus mirabilis*).



Bandoni.

Rough-stem boletus (*Boletus scaber*).

viscid when wet, smooth or velvety. *Tubes:* Free from the stem, whitish when young, turning pale brownish when old and darkening when bruised. *Flesh:* Soft, whitish and often changing slowly to pale pinkish or bluish when cut, taste mild, odour mushroomy and rather pleasant. *Stem:* Up to 6 inches long, ¾ inch or more thick, firm, equal or tapering upwards, whitish, roughened by black raised dots forming conspicuous lines, turning bluish when cut. *Spore Print:* Brown.

HABITAT.—Singly or in groups in open places, parklands, bushlands, alpine meadows, bogs, and muskeg. Usually associated with birch or aspen.

SEASON.—Late summer, fall.

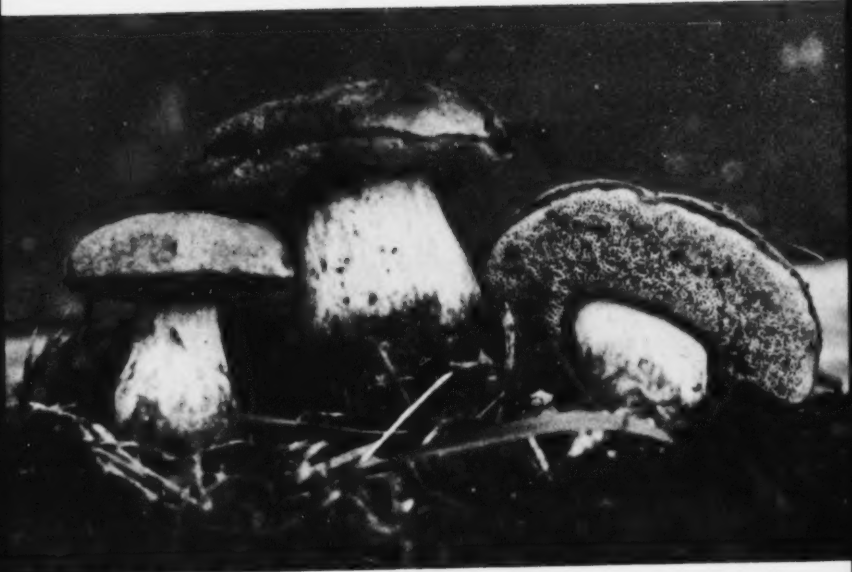
EDIBILITY.—A choice edible species.

COMMENTS.—A common mushroom in British Columbia, especially in northern parts of the Province, where it can be collected in July and August. The rough-stem boletus is one of the few edible fleshy fungi that is to be found even in the northern tundra or in the vast muskeg areas, where it is associated with the arctic birch (*Betula glandulosa*). This mushroom is distinguished by its rough stem with black dots forming ridges or lines, and from which it receives its name. It is suitable for frying or stewing, and is enhanced in the latter case by the addition of onion and sour cream.

Boletus zelleri **Zeller's Boletus**

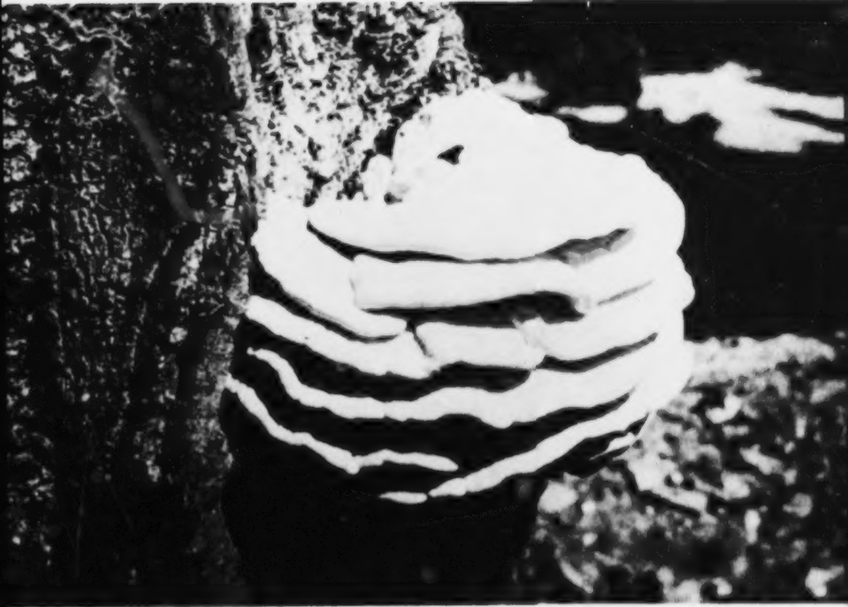
DESCRIPTION.—Cap: Up to 4 inches broad, convex, fleshy, the surface uneven and somewhat velvety in texture, dark brown to nearly black, covered by a greyish bloom. *Tubes:* Yellow, becoming dirty yellow and finally greenish-yellow, not changing when bruised or sightly brownish when exposed to the air for a time. *Flesh:* Yellow to dirty yellow, not changing colour when cut or broken. *Stem:* Up to 2 inches long, ½–1 inch thick, swollen toward the base, red or yellowish with red lines, often white or yellow at the base, solid, the flesh fibrous in texture. *Spore Print:* Olive brown.

HABITAT.—Singly or in groups on ground in mature coniferous forest rich in humus cover, occasionally on grassy edges of the forest, rarely on badly decayed conifer logs.



Underhill.

Zeller's boletus (*Boletus zelleri*).



Szczawinski.

Sulphur polypore (*Polyporus sulphureus*).

SEASON.—Summer to early winter.

EDIBILITY.—A good edible species.

COMMENTS.—This is one of our earliest boletes and also is the last to disappear in the season. It can be identified by its dark cap with an uneven surface, stiff red-streaked stem, and by the fact that the flesh does not change colour when bruised or cut. This species is suitable for preserving or drying and also is excellent when cooked fresh. It occurs in large quantities in many parts of the Province.

PORE FUNGI (*POLYPORES*)

Polyporus sulphureus **Sulphur Polypore, Chicken Fungus**

DESCRIPTION.—*Fruiting Body:* Shelf-like flattened lobes, without stems and attached by one margin, or a number of the lobes arising from a stem-like base, the individual lobes tapered toward the attachment point, the margin thick, rounded, up to 6 inches wide, 8 inches long, and 1 inch thick. The upper surface ranges from bright sulphur yellow to bright orange or reddish, often with a zonate pattern, finely ridged and furrowed, hairy. The pore surface typically is bright sulphur yellow, but may fade with age. *Flesh:* White or pale yellow, soft and watery when young, becoming firm. *Spore Print:* White.

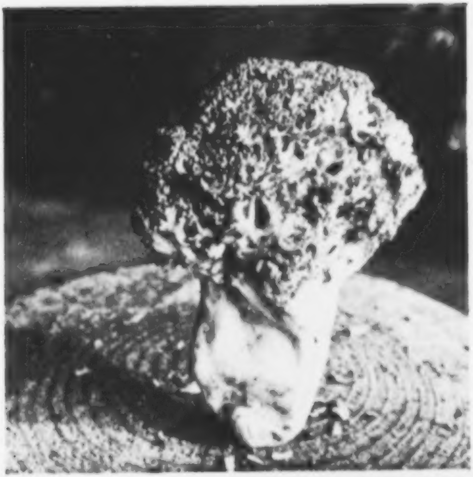
HABITAT.—Usually in dense clusters on stumps, dead trunks, or sometimes living trees. It is found on both coniferous and deciduous trees, especially on hemlock and Garry oak in the Victoria region.

EDIBILITY.—The young fruiting bodies are edible and choice.

COMMENTS.—This is one of the more brilliantly coloured forms found in the Polyporaceæ and also is one of the few that can be eaten. Most are tough and unpalatable. The sulphur polypore also becomes tough and rubbery in age and is then no longer suitable as food.

CORAL FUNGI (*CLAVARIAS*)

The coral mushrooms are fleshy fungi characterized by upright growth; they are mostly branched, resembling miniature bushes or corals. Many are beautifully coloured; they are commonly seen



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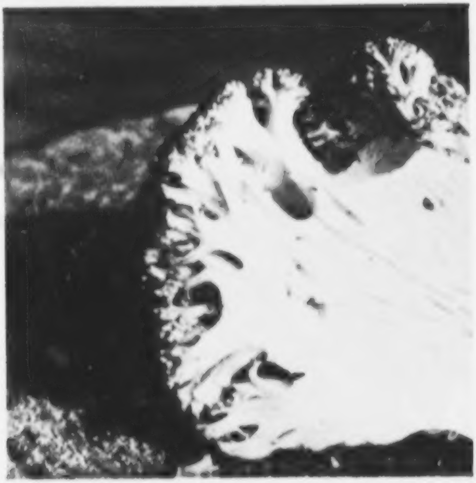


Underhill.

Purple-tipped coral fungus (*Clavaria botrytis*).

in our woods in summer, fall, and occasionally in spring. There are some so small that they are easily overlooked by the untrained eye, and others so large and striking that they can be picked out from a distance. They grow on soil rich in humus or on decaying wood in moist and shady forests. As a rule, the species are difficult to identify. Consequently, this handbook includes only a few that we consider of some significance to the mushroom-hunter.

Many of the species are edible, but most are not of superior quality. Some have a rather unpleasant taste, and two of the species, *Clavaria gelatinosa* and *C. formosa,* should be avoided. These two have been reported as having a poisonous effect, at least for some individuals. Both species occur in British Columbia and are discussed in the text.

Clavaria botrytis Purple-tipped Coral Fungus

DESCRIPTION.—*Fruiting Body:* Fleshy, erect, much branched, reaching a diameter of 12 inches or more in some cases, and a height of up to 6 inches. The thick branches are divided irregularly, coral-like, the fine branchlets ending in spine-like tips, giving the fungus a compact shrubby appearance. The colour of the branches is cream white with pink to red tips. This colour partially disappears with age, and the extreme tips of the branchlets become brownish. *Flesh:* Whitish, slightly yellowish toward the tips, firm and of mild taste and odour. *Spore Print:* Yellow.

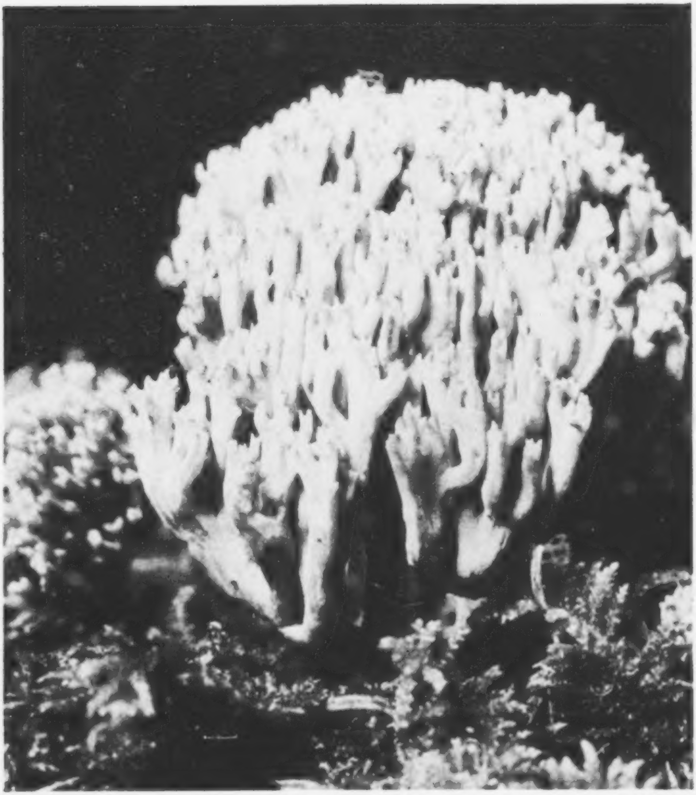
HABITAT.—Solitary or in groups, on the ground, sometimes in " fairy rings " in shady, mature coniferous forest. Often associated with mosses.

SEASON.—Late summer and fall.

EDIBILITY.—Edible.

COMMENTS.—One of the largest of our coral mushrooms, and of striking colour. It is considered by many as a good edible species and claimed to be tender and tasty if young firm specimens are selected.

This must not be confused with gelatinous coral mushroom. (*see* Comments under *C. subbotrytis*).



Nicholls.

Pink coral fungus (*Clavaria formosa*).

Clavaria formosa **Pink Coral Fungus**

DESCRIPTION.—*Fruiting Body:* Fleshy, shrub-like, of numerous erect branches arising from a single base, the mass up to 12 inches in·diameter and 10 inches in height, white below, the branches flesh-coloured or pinkish with yellow tips. *Flesh:* Fibrous, fragile, the taste slightly unpleasant and acrid. *Spore Print:* Yellowish.

HABITAT.—Solitary or in groups on ground rich in humus; in coniferous forests.

SEASON.—Fall.

EDIBILITY.—Doubtful.

COMMENTS.—The distinguishing features of this species are the colour and the fleshy texture. *C. subbotrytis* is of similar appearance, but it has flesh of a gelatinous or rubbery consistency. According to some authors, *C. formosa* acts as a purgative and should be avoided.

Clavaria pistillaris **Club Clavaria**

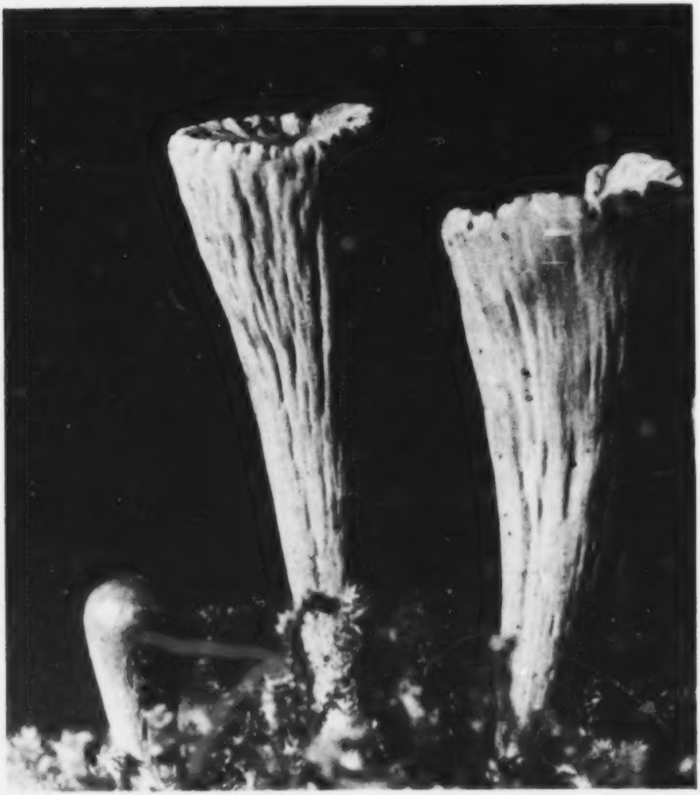
DESCRIPTION.—*Fruiting Body:* Unbranched, club-shaped, up to 6 inches in height, 1–2 inches thick above and tapering downwards, smooth, often with vertical ridges, pale yellow to pale brown. *Flesh:* White, soft, the fruiting body hollow with age. *Spore Print:* White.

HABITAT.—In moist places, often among mosses, in coniferous or mixed forest.

SEASON.—Late summer to fall.

EDIBILITY.—Edible, of mild flavour.

COMMENTS.—The large unbranched fruiting bodies of this species are very different from those of most other clavarias. However, a closely related form occurring in British Columbia and having a similar appearance is *C. truncata*. This species is also club-shaped when young, but the mature fruiting bodies have a flat or slightly concave apex. It occurs in the summer and fall and is found in mature coniferous forests.



Nicholls.

Club clavaria (*Clavaria truncata*).

Clavaria subbotrytis — Rose-pink Coral Fungus

DESCRIPTION.—*Fruiting Body:* Erect, bushy with numerous branches 2–6 inches high, fleshy, rose or rosy pink, fading in age to salmon pink, the branches arising from a thick central stem-like base. *Flesh:* White, firm, without noticeable odour or taste. *Spore Print:* Pinkish.

HABITAT.—On ground rich in humus in mature coniferous forest.

SEASON.—Late summer and fall.

EDIBILITY.—Edible but uninteresting.

COMMENTS.—This attractive rose-coloured fungus is not highly graded as to edibility, and precautions should be taken not to confuse it with the gelatinous coral mushroom (*C. gelatinosa*). The latter is pinkish-cinnamon in colour, the flesh of its base and lower branches being watery and gelatinous with a semi-transparent consistency. The spore print of *C. gelatinosa* is ochre, while in *C. subbotrytis* it is pinkish.

TOOTH FUNGI

Hericium coralloides — Coralloid Hericium

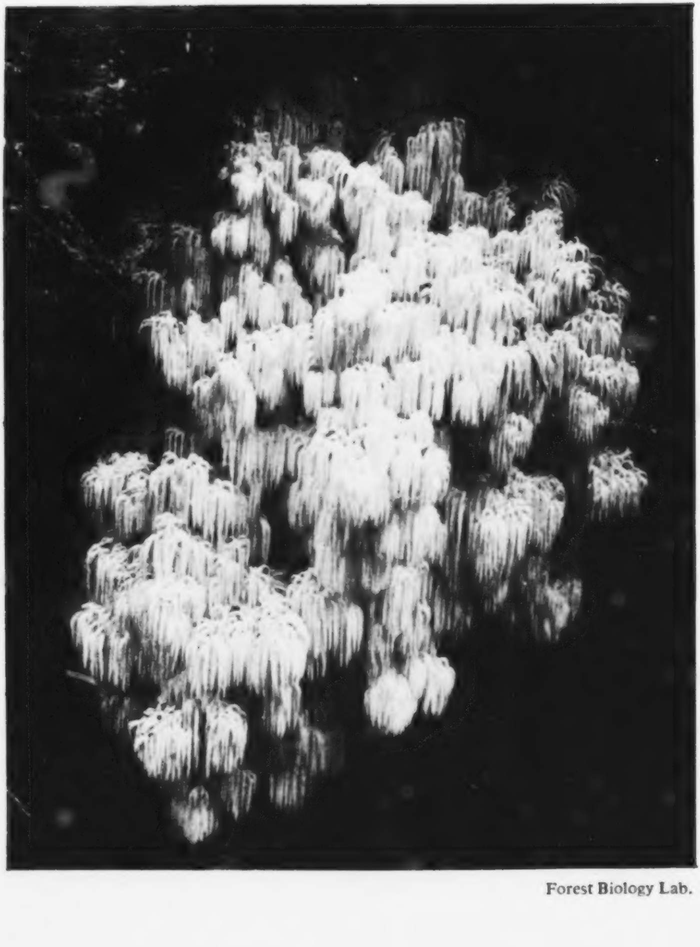
SYNONYM.—*Hydnum coralloides.*

DESCRIPTION.—*Fruiting Body:* White, fleshy, up to 2 feet broad, originating from a single solid stem-like structure which branches repeatedly, forming a compact mass. The spore-bearing structures are found on the pendant spines or " teeth," which resemble icicles or stalactites, and in this species are ¼–½ inch long. *Spore Print:* White.

HABITAT.—On logs of conifers, especially Douglas fir.

EDIBILITY.—Edible.

COMMENTS.—This species is occasionally abundant in mature coniferous forests on the coast. *Hericium caput-ursi*, the bear's head fungus, and several other species are sometimes recognized, but there is uncertaintly concerning the validity of some of these. Correct identification is difficult, but the layman need not be concerned as there are no poisonous species among these.



Forest Biology Lab.

Coralloid hericium (*Hericium coralloides*)..

Hydnum repandum **Hedgehog Mushroom, Yellow Spine Fungus**

DESCRIPTION.—*Cap:* Up to 5 inches broad, but generally smaller here, rounded or usually irregular in outline, convex or flattened or depressed and funnel-shaped, fleshy, smooth, often minutely velvety, creamy white, buff, rusty yellow, or slightly reddish. *Spines:* White or creamy in colour, round or slightly flattened, pointed, extending down the stem. *Flesh:* White or cream, soft. *Stem:* Rather short, usually no more than 2 inches long, thick, smooth, solid, becoming hollow, usually central but sometimes eccentric. *Spore Print:* White.

HABITAT.—Solitary or in groups on ground in coniferous or mixed forest.

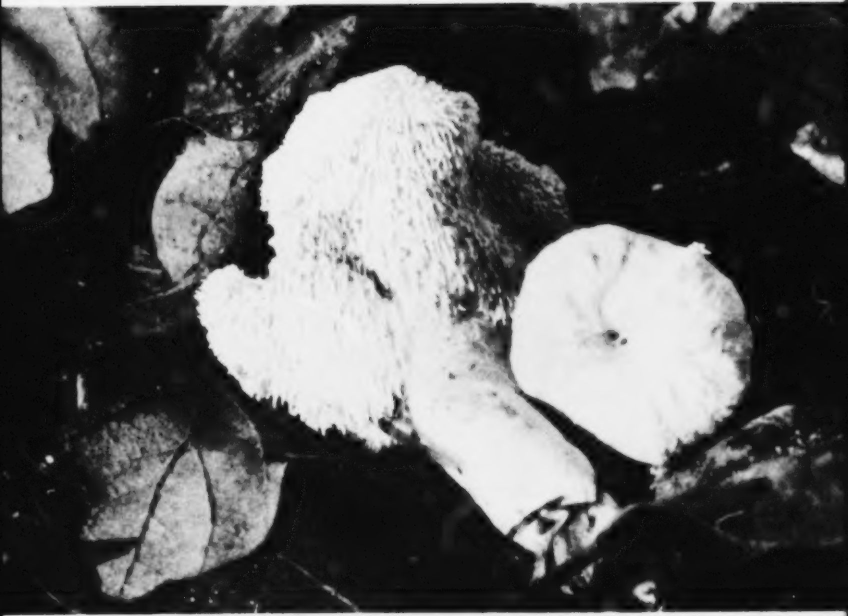
SEASON.—From midsummer to late fall. On Vancouver Island it occurs sometimes in mild winters as well.

EDIBILITY.—Considered edible and choice.

COMMENTS.—The hedgehog mushroom resembles a gilled mushroom as it has a cap and stem, but instead of gills the undersurface of the cap has pendant teeth or spines vertically arranged. Many collectors are very enthusiastic about this mushroom, not only because of its high edible quality, but also because of its long season. This may start in midsummer and often extends throughout a mild winter, when most other species have disappeared.

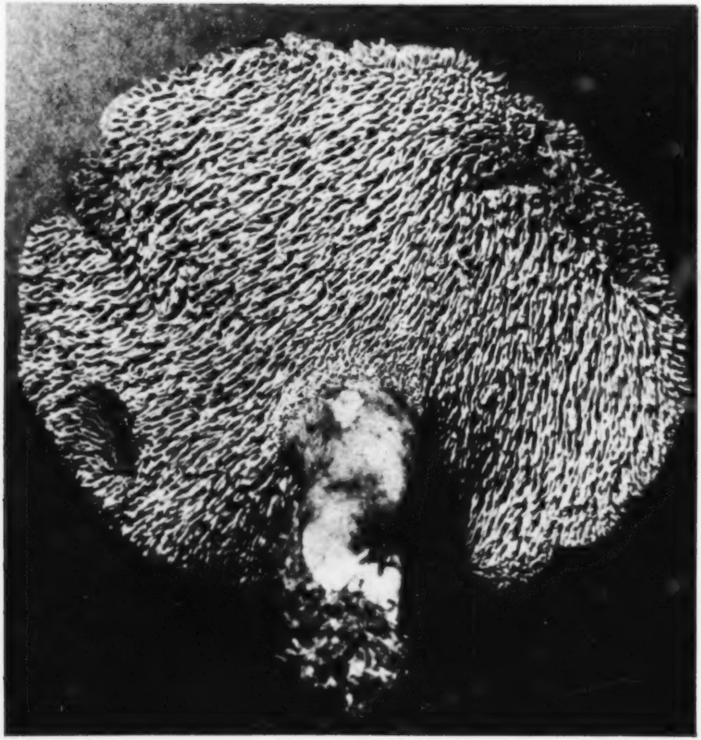
As the hedgehog mushroom requires thorough cooking, it is particularly recommended for casserole dishes.

A related species is the imbricated hydnum (*Hydnum imbricatum*), with a cap up to 10 inches broad, centrally depressed, dark brown, covered by large, erect, coarse brown scales. The spines are fragile, whitish at first, then grey to greyish-brown. Only young specimens can be eaten, as the older ones are too tough and are acrid in taste. The imbricated hydnum is found occasionally in moist mature coniferous or mixed forests on Vancouver Island, where it is most common on the west coast in the fall.



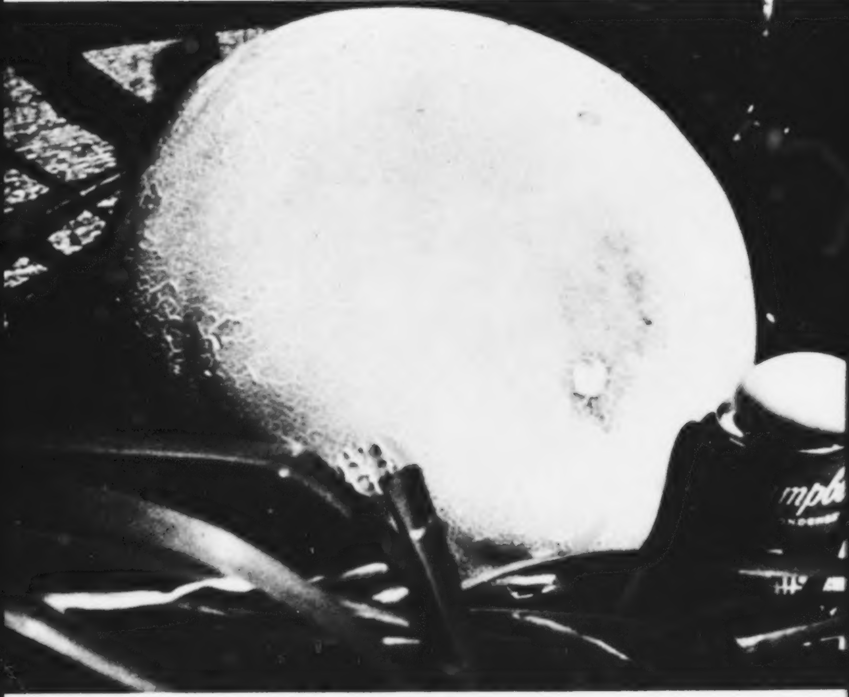
Underhill.

Hedgehog mushroom (*Hydnum repandum*).



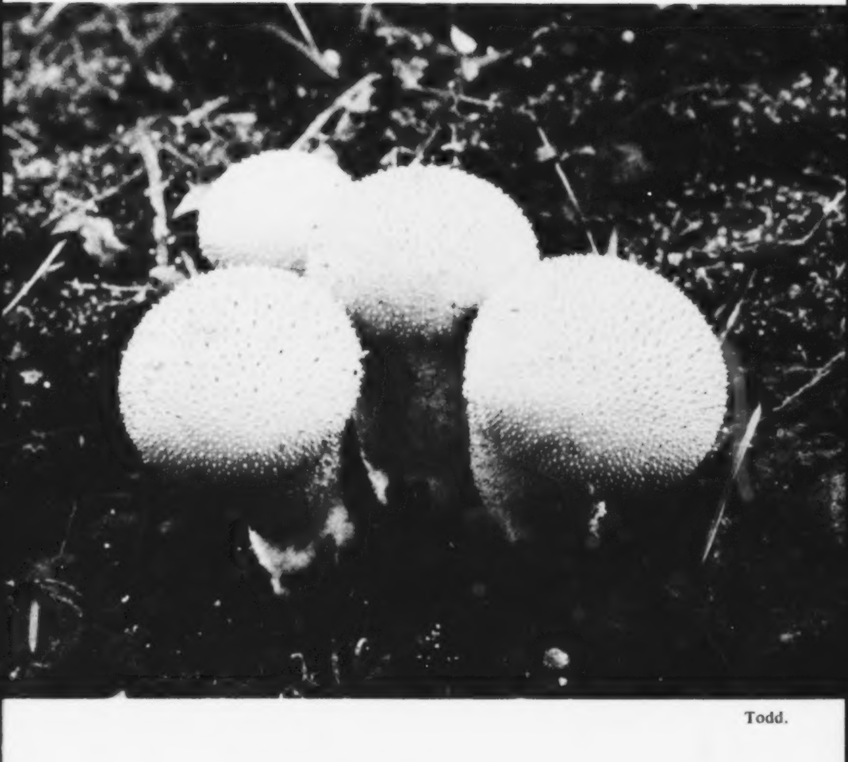
Reith.

Imbricated hydnum (*Hydnum imbricatum*).



Szczawinski.

Giant puffball (*Calvatia gigantea*).



Todd.

Gemmed puffball (*Lycoperdon perlatum*).

PUFFBALLS

Calvatia gigantea **Giant Puffball**

DESCRIPTION.—*Fruiting Body:* From 2–24 inches in diameter, weighing up to 30 pounds or more, more or less globose, attached to the ground by a cord-like mycelial strand, surface smooth, chamois-like in texture, white when young becoming creamy tan and finally brownish, splitting irregularly with age. *Flesh:* White and firm when young, changing to yellowish-green then olive brown, finally rusty and powdery as the spores mature.

HABITAT.—Solitary or in groups on moist soil rich in organic matter, especially pastures, lawns, or fields.

SEASON.—Late summer and fall, occasionally in spring.

EDIBILITY.—A good edible species.

COMMENTS.—The giant puffball is an excellent mushroom for beginners as there is little fear of confusion with other species. Only young specimens which are firm and pure white inside are suitable for consumption. It is therefore recommended that they should be cut open; any which show a yellowish tinge should be discarded.

In preparing puffballs for the table, peel larger specimens, slice in thin pieces, and fry golden brown. Some prefer to dip the slices in egg batter then bread crumbs before French frying.

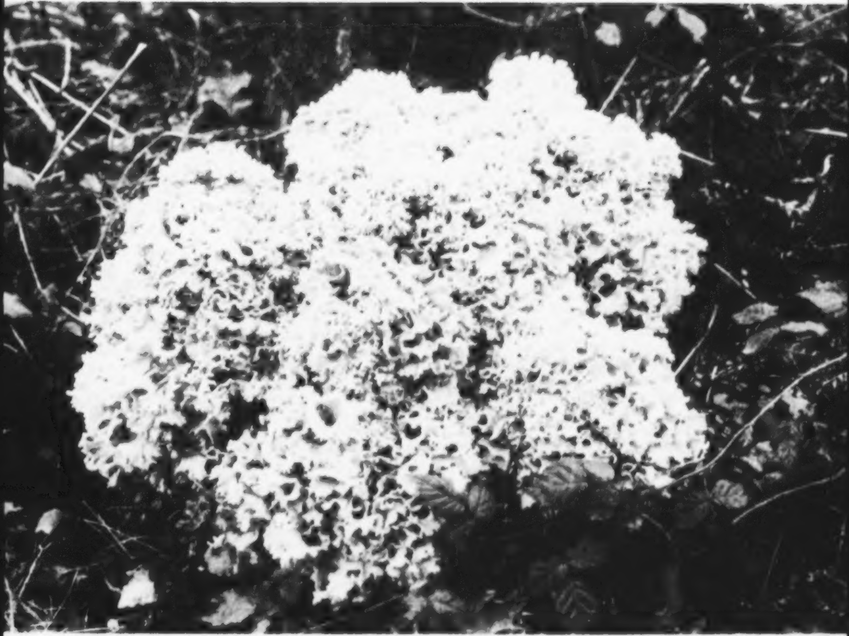
Lycoperdon perlatum **Gemmed Puffball**

SYNONYM.—*Lycoperdon gemmatum.*

DESCRIPTION.—*Fruiting Body:* Up to 3½ inches high and up to 2½ inches wide, top-shaped, rounded above and tapering to a stalk-like base, attached by a white fibrous mycelium, surface covered by soft, erect, spine-like warts which often fall away as the fruiting body matures, white when young, becoming cream to buff, finally tan or brown. *Flesh:* Soft, white in young specimens, soon becoming yellowish then brown and powdery. The mature spores are released through an opening at the top of the fruiting body.

HABITAT.—Solitary or more commonly in dense clusters on ground. In gardens, fields, or along trails in wooded areas.

SEASON.—Summer and fall.



Nicholls.

Cauliflower fungus (*Sparrassis radicata*).

EDIBILITY.—Edible when the flesh is white and firm.

COMMENTS.—This is a very common species and is easily recognized by its shape and characteristic spine-like warts on the surface. As with other puffballs, this species is edible, but only specimens pure white within are suitable. Beginners can avoid confusion with the button stages of gilled mushrooms by examining the fruiting bodies when split lengthwise.

CAULIFLOWER FUNGUS

Sparrassis radicata **Cauliflower Fungus**

DESCRIPTION.—*Fruiting Body:* Roughly spherical in outline, up to 30 inches broad and 20 inches high, composed of many flattened ribbon-like lobes compactly arranged and arising from a central stem-like structure. The branches are white to pale yellowish or greyish, thin, flexible, up to 1 inch broad, often with wavy margins. The central stem-like portion is up to 2 inches thick, fleshy, root-like, and penetrating the soil. *Spore Print:* White.

HABITAT.—Occurring singly at the bases of coniferous trees. It is perennial and will fruit in the same spot for several consecutive years.

SEASON.—Late summer and fall.

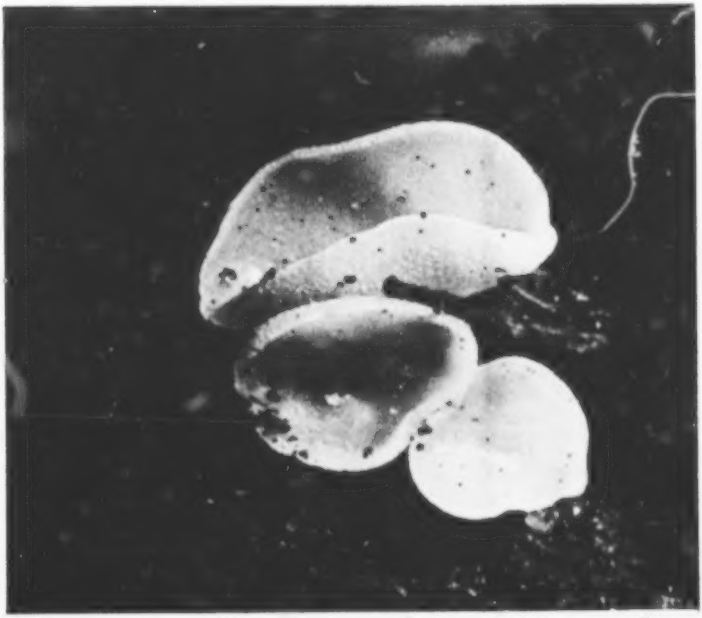
EDIBILITY.—Edible, with a strong flavour but highly prized by some.

COMMENTS.—Single large specimens of the cauliflower fungus may attain a weight of 20–30 pounds. It is of rather tough consistency and therefore must be cooked for a relatively long period. The older fruiting bodies become too tough for use. This species can be dried and powdered, the powder being excellent for flavouring soups and sauces.

SAC FUNGI (*ASCOMYCETES*)

Aleuria aurantia **Orange Fairy-cup**

DESCRIPTION.—*Fruiting Body:* Cup-shaped at first, expanding, becoming flattened, often irregular in outline, up to 4 inches broad,



Lemon.

Orange fairy-cup (*Aleuria aurantia*).

the upper surface smooth, bright orange, the lower surface white or whitish, attached only at the centre. *Flesh:* Thin, fragile.

HABITAT.—On the ground, usually in wet gravelly or sandy soils, along streams or roads or on recently cleared areas.

SEASON.—Late summer to early winter, less abundantly in the spring.

EDIBILITY.—Edible but not of superior quality.

COMMENTS.—The orange fairy-cup is our commonest cup fungus. A number of species of *Peziza,* a closely related genus, occur in British Columbia. These resemble *A. aurantia* in form, but they are mostly tan or some shade of brown and are less conspicuous.

Gyromitra esculenta **False Morel**

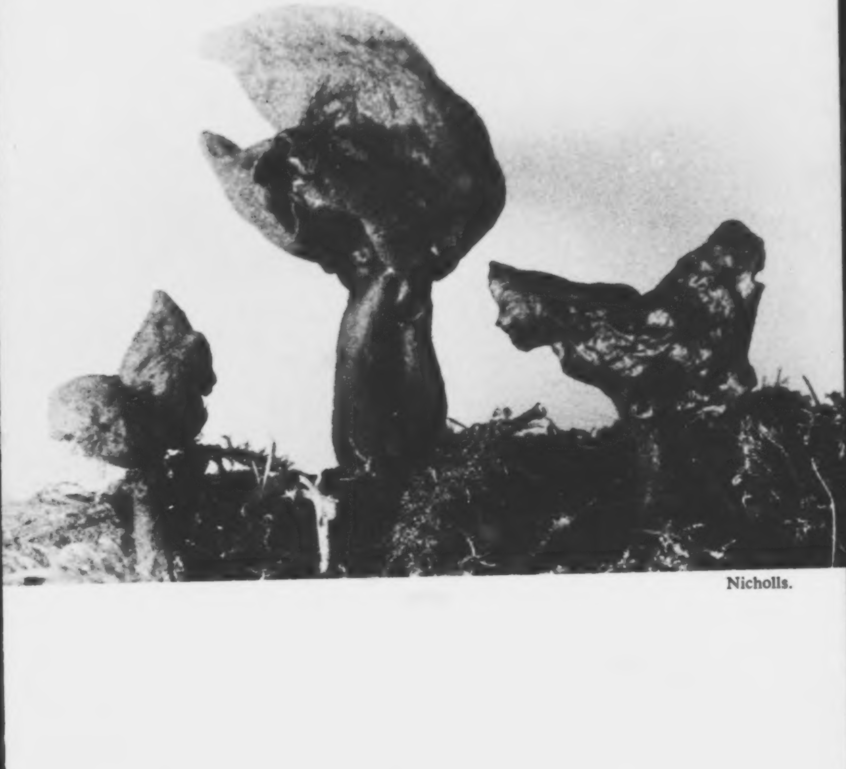
DESCRIPTION.—*Cap:* Up to 4 inches broad, tan to reddish-brown or chocolate brown, irregular in shape, rounded on the top, contorted, folded, and wrinkled (not pitted as in the common morel). *Stem:* As a rule, not more than 2 inches long and 1 inch thick, whitish, smooth, usually grooved above, fragile, solid at the base, hollow, or with open chambers above. *Spore Print:* Yellowish.

HABITAT.—Singly or in small groups on the ground at the edges of moist wooded areas or in the open on compost heaps.

SEASON.—Spring and early summer.

EDIBILITY.—Very questionable.

COMMENTS.—This species is sometimes called the brain mushroom because of the convoluted surface of the cap. The false morel might be confused by inexperienced collectors with the true morels. However, the latter have the cap pitted rather than irregularly folded and convoluted as in this species. As for the edibility of the false morel, a word of warning should be given. This mushroom is regularly eaten by some, but cases of poisoning are on record; its edibility still remains a subject of controversy. Since the poisoning is of a severe type, this species should be avoided.



Nicholls.

Hooded gyromitra (*Gyromitra infula*).

Gyromitra infula **Hooded Gyromitra**

SYNONYM.—*Helvella infula.*

DESCRIPTION.—*Cap:* Up to 5 inches broad, from pale to dark reddish-brown, usually somewhat saddle-shaped, occasionally subglobose, with the margin incurved, the surface smooth, sometimes slightly convoluted. *Stem:* Up to 3 inches long and ¾ inch thick, smooth, sometimes with broad grooves, brittle, hollow above, pale reddish.

HABITAT.—Singly or in groups on the ground, especially on recently cleared forested areas.

SEASON.—Late summer and fall.

EDIBILITY.—Doubtful, regarded as poisonous by some.

COMMENTS.—The saddle-shaped cap, with few or no convolutions, distinguishes this species from *G. esculenta.*

As in the case of false morel, the hooded gyromitra is regarded by some authorities as a poisonous species.

It has been considered by some to be closely related or not as distinct from *G. esculenta.* In British Columbia the two have different seasons, *G. infula* occurring in late summer and fall and *G. esculenta* in spring and early summer. *G. infula* is found in great numbers on recently cleared forested areas or less abundantly along trails in the woods.

Helvella lacunosa **Elf's Saddle**

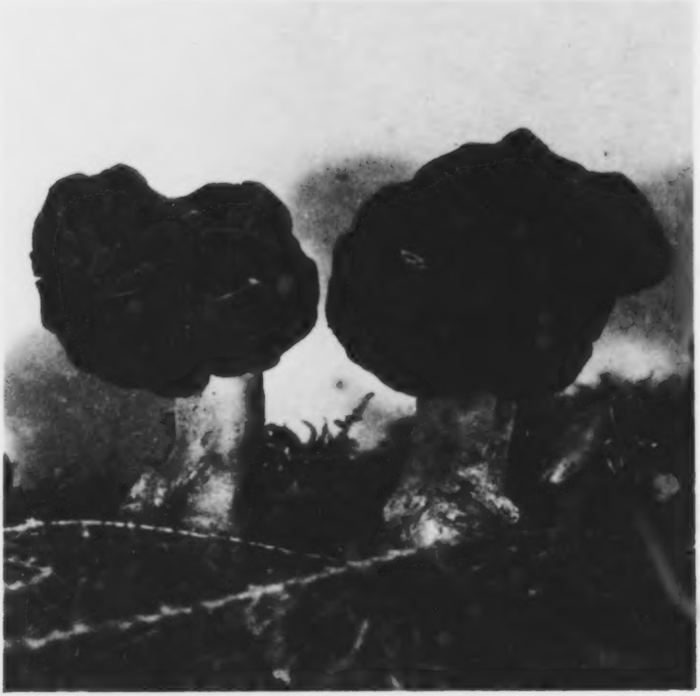
DESCRIPTION.—*Cap:* Up to 2 inches or more broad, light to dark greyish or almost black, thin, fragile, variable in shape, usually folded and saddle-shaped with the lobes free from the stem. *Stem:* Up to 6 inches long and ½–1¼ inches thick, whitish to ashy grey, deeply ridged and grooved.

HABITAT.—Singly or in scattered groups on ground. Usually along trails or in open woods.

SEASON.—Summer and fall.

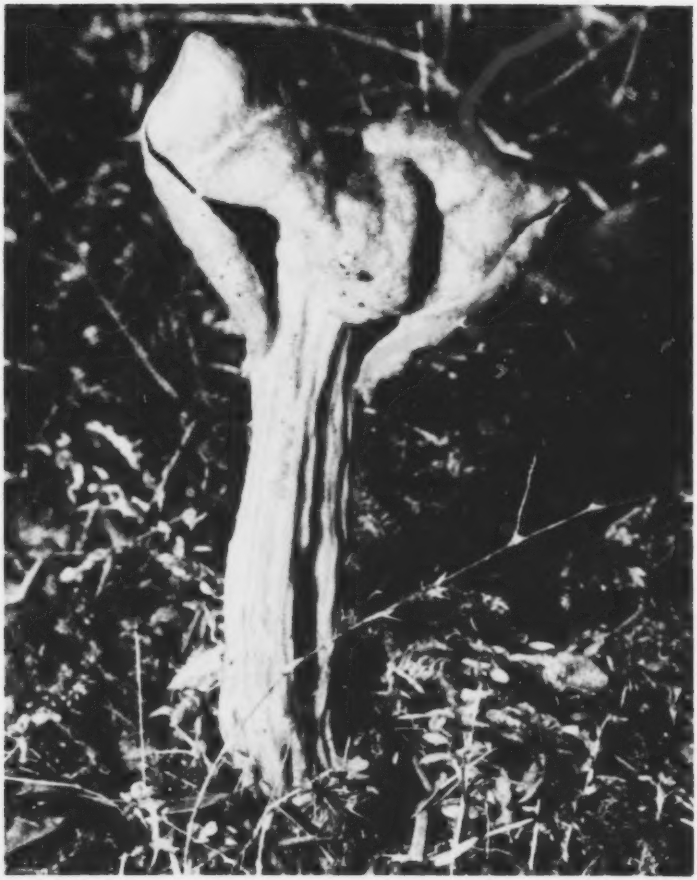
EDIBILITY.—Edible (*see* Comments).

COMMENTS.—The elf's saddle can be recognized by its irregularly saddle-shaped cap and by its grooved stem. Another interesting feature of this mushroom is the visible mass of spores sometimes



Nicholls.

Brain mushroom (*Gyromitra esculenta*).



Reith.

Elf's saddle (*Helvella lacunosa*).

discharged when the fruiting body is touched. It is generally considered as an edible mushroom with a flavour similar to that of the morels. However, it is advisable to use only young specimens and to eat only a small amount when trying this species for the first time.

Morchella angusticeps **Narrow-capped Morel, Sponge Mushroom**

DESCRIPTION.—*Cap:* Up to 6 inches long, 1–3 inches wide at the base and tapering upwards, more or less conic in form, the surface covered by deep elongated pits which are in irregular vertical rows, greyish cream-coloured to tan or light yellowish-brown, the tips of the ridges between pits smoky brown or almost black in age. *Stem:* 2–4 inches long, 1–2 inches wide at the base, narrower upward, the surface slightly cottony, hollow, whitish to cream-coloured or pale yellowish.

HABITAT.—Single or in groups in open woods, especially along streams, often growing in grassy areas where there is some shade.

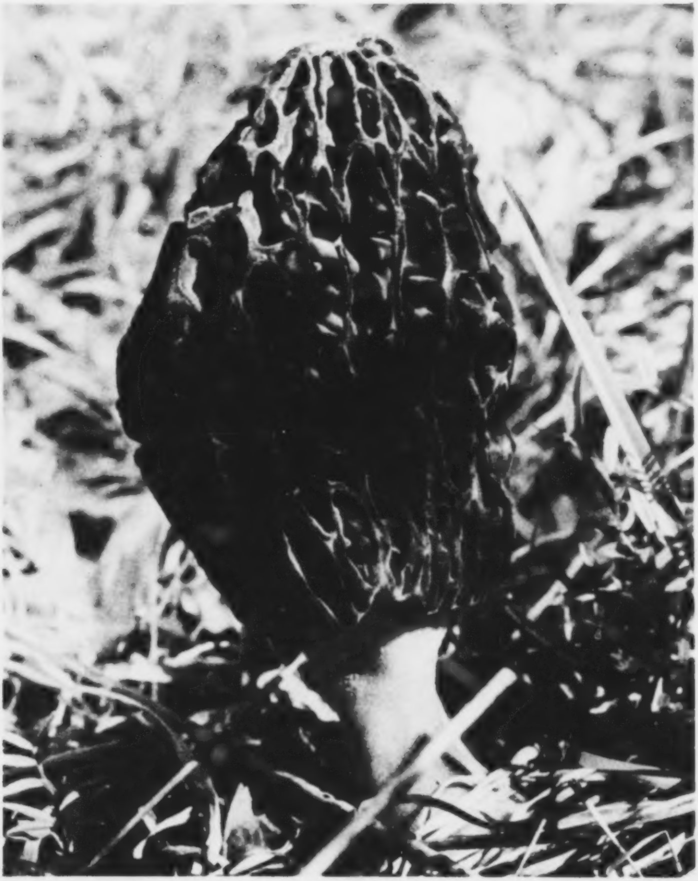
SEASON.—Sometimes as early as late February in coastal British Columbia, more commonly during late March and April; May or June in the interior and at higher altitudes.

EDIBILITY.—Edible, choice.

COMMENTS.—Many mushroom-fanciers consider the morels to be the best of the edible mushrooms, and there are numerous recipes for their preparation. While *M. angusticeps* is the most commonly collected species on the lower mainland and Vancouver Island, *M. esculenta* also occurs in the Province. This species is usually smaller than the narrow-capped morel, and the cap is oval to almost spherical. It sometimes occurs in large numbers in aspen groves in the interior. The species of *Morchella* are rather difficult to separate, but all are edible.

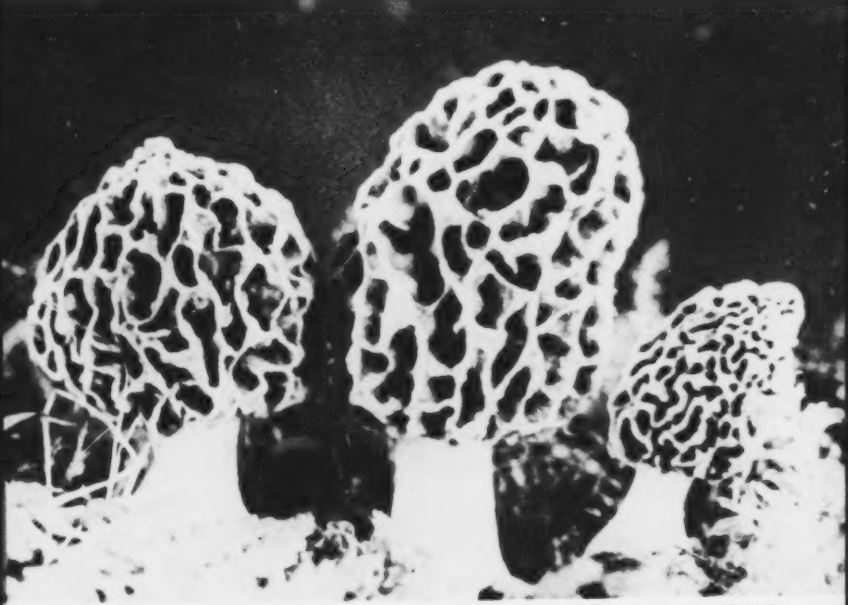
Verpa bohemica **Early Morel**

DESCRIPTION.—*Cap:* Thimble-shaped, up to 2 inches long and 1–1½ inches broad, skirt-like with the lower portion free from the stem, the surface with coarse longitudinal folds, edges of the



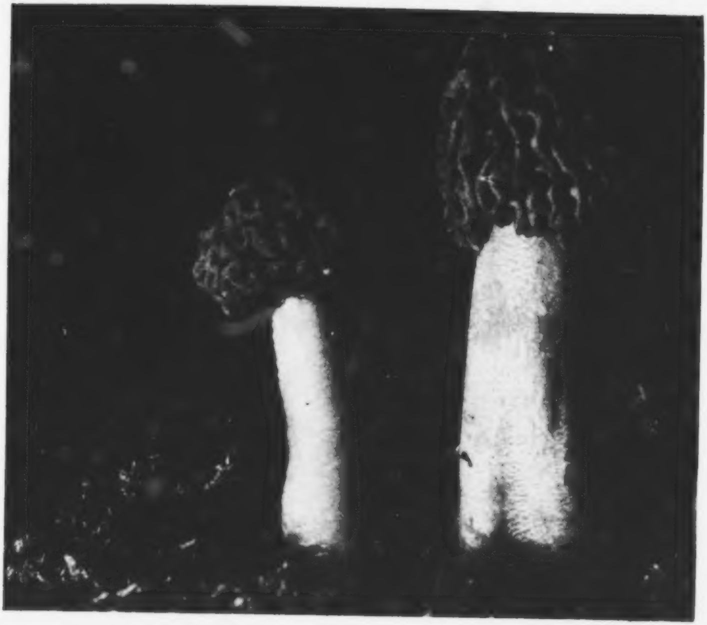
Reith.

Narrow-capped morel (*Morchella angusticeps*).



Nicholls.

Sponge mushroom (*Morchella esculenta*).



Nicholls.

Early morel (*Verpa bohemica*).

folds thick and rounded, becoming sharper with age; tan to brown, the edges of the folds finally blackish. *Stem:* Up to 5 inches long and 1 inch thick, cylindric or broadest at the centre, brittle, hollow, white to pale cream-coloured.

HABITAT.—Scattered or in small groups on the ground. Usually associated with woody members of the rose family; e.g., wild cherry and Saskatoon berry.

SEASON.—Spring, commonly appearing during the same week of each year and in the same spot. The time varies from the first week of April in coastal British Columbia to midsummer in the interior or at higher altitudes.

EDIBILITY.—Edible, choice (but *see* Comments below).

COMMENTS.—There is little danger of confusing this species with any poisonous form in British Columbia. It can be collected in large quantities, and we consider it excellent. However, Smith (1958) reports a lack of muscular co-ordination after eating a large quantity of this species. We would therefore recommend that anyone testing this species for the first time should eat only a small amount. Only the caps are used.

MUSHROOM COOKERY

For those collecting mushrooms to eat, accurate identification is absolutely essential. It is a good rule never to try any species of mushroom unless you are certain of its identity and know of others who have eaten it. Even then one should eat only a small amount when trying a new mushroom for the first time. One person may eat a given species and suffer no ill effects; others may show an allergic response to the same mushroom. There are no simple tests for distinguishing between the edible and poisonous forms. All of our information on this subject is based upon past experience. We know that a given species is poisonous only because people have become ill or died after eating it. Toxins present in the amanitas and similar forms can be detected by complex chemical techniques, but these require elaborate equipment and a thorough knowledge of chemistry.

SELECTION OF MUSHROOMS

When collecting mushrooms to eat, discard any which are either past maturity or too young for accurate identification. If there is ever any doubt concerning the identity of a specimen, throw it away. Do not rely on book identifications, especially when first becoming familiar with mushrooms. If possible, obtain help from others interested in this subject and who have had some experience in identifying these forms. The following list includes some of the more easily recognized of edible species recommended for the beginner:—

Chanterelle (*Cantharellus cibarius*).
Shaggy mane (*Coprinus comatus*).
Delicious lactarius (*Lactarius deliciosus*).
Gemmed puffball (*Lycoperdon perlatum*).
Narrow-cap morel (*Morchella angusticeps*).
Morel (*Morchella esculenta*).
Chicken fungus (*Polyporus sulphureus*).
Cauliflower fungus (*Sparassis radicata*).

Mushrooms vary greatly in flavour from species to species. They also vary in this respect with age; the older specimens usually having a stronger flavour. In some species (*Pleurotus ostreatus, Polypòrus sulphureus,* etc.) the older fruiting bodies become rather tough for frying or stewing, although they may still be suitable for pickling in vinegar or for drying. Selection here is largely a matter of individual preference, but some consideration must also be given to the use to which the mushrooms will be put. In general, firm or tougher types of mushrooms require long slow cooking; they also may be pickled or dried. The delicate species cook quickly and often are unsuitable for pickling. We have included here only a few of the many recipes for preparing mushrooms. We have also tried to indicate the kinds of mushrooms most suitable for different methods of cooking or preparing.

While mushrooms are often used as meat substitutes, their nutritional value is far below that of meat. They are about equal to some of the common garden vegetables in this respect, being rich in certain vitamins and minerals but low in protein. Perhaps the main value of mushrooms is in the flavour which they impart to many kinds of dishes.

PREPARATION

Wash all mushrooms with cool water before using. They may then be dried with a cloth or simply allowed to drain dry. Stalks or any undesirable portions can then be removed. It is best to split the caps vertically and to cut across the stem in order to check for insect larvæ or their activities. If the mushrooms are not to be cooked immediately, they can be stored in a cool place. They should not be allowed to freeze if stored in a refrigerator.

RAW MUSHROOMS

Mushrooms to be eaten raw are cleaned as above and then peeled. For use in tossed salads, cut into small pieces. The larger mushrooms, *Agaricus, Russula,* etc., are best for this purpose.

Larger caps of these species also may be stuffed. Remove the stems and fill with soft cream cheese to which finely chopped onion or chives has been added.

The delicate caps of *Pleurotus porrigens* are sometimes dried, salted, and eaten raw.

COOKED MUSHROOMS

Baked Stuffed Mushrooms

1 lb. medium to large fresh mushrooms (*Agaricus, Boletus,* and similar large fleshy species are best for this purpose).
½ cup bread crumbs.
¼ cup finely chopped onion.
¼ cup finely minced celery.
¼ cup melted butter or cooking-oil.
Salt, pepper.
Sage, thyme, marjoram.

Combine bread crumbs, onion, celery, and butter; season. Remove stems from caps, brush the latter with oil or butter, fill with stuffing. Arrange in shallow baking-pan, stuffed sides up, and bake at 350° F. for about 15 minutes. If mushrooms become too dry, add a tablespoon of water.

BROILED MUSHROOMS

Remove stems and place caps in broiling-pan with rounded sides down. Brush with melted butter, sprinkle with salt and pepper, and broil for 5 to 10 minutes. Serve with steaks or with bacon on toast.

FRIED OR SAUTÉED MUSHROOMS

This probably is the commonest method of preparing mushrooms of many kinds. The cleaned mushrooms are sliced, or, if buttons are used, they may be cooked whole. They are then fried in butter or cooking-oil and seasoned lightly with salt and pepper. The latter should be added when the mushrooms are almost cooked. Because of the great amount of shrinkage, it is very easy to overseason if these are added beforehand. Cook over low heat until tender.

Finely minced onion or a small clove of chopped garlic can be cooked with the mushrooms if desired.

Sometimes the flavour and texture of fried mushrooms are better if cooked rapidly over rather high heat.

Mushrooms can be sautéed with wine as follows: Prepare mushrooms as above, sautéing for about 5 minutes in oil or butter. Add a small amount of finely minced onion, and cook for 7 or 8 minutes more. Season with salt and pepper and add sherry (½ cup per pound of mushrooms). Heat again for 5 minutes, but do not allow to boil. Serve while hot on buttered toast, as a vegetable, or with steaks.

MUSHROOMS FRIED IN BATTER

Cut cleaned mushrooms (young *Pleurotus sapidus, Agaricus, Boletus,* etc.) into thick slices, dip in egg batter and bread crumbs. Cook in butter or oil, seasoning to taste.

MUSHROOM STUFFING

See Good Housekeeping Cook Book. This recipe includes mushrooms, rice, pecans, and the usual stuffing ingredients. It is a delicious alternative to the ordinary poultry stuffings.

MUSHROOM OMELET

Cut mushrooms into slices, wash and drain in a cloth. Fry in butter until brown and season with salt, pepper, and a dash of paprika. Beat the eggs with a fork, adding some milk. Pour eggs over the fried mushrooms, lift from the edges, fold and serve at once. Another way of serving is to add the fried mushrooms to the already fried omelet, folding them into it before serving.

MUSHROOM SOUP

There are a great many different recipes for preparing mushroom soup. Here is one of the simplest and most popular ones:—

Gently sauté 1 lb. of whole or chopped mushrooms (any edible variety) in 2 tblsps. butter until they are tender but not browned. Add ½ pt. milk thickened with 1 tblsp. flour, 1 oz. butter, 1 tsp. salt, and season with pepper and onion salt. To improve the flavour add 1 cup of cream. Bring to a boil then serve. Vegetables such as minced celery and parsley can, of course, be added. Serve hot.

CHANTERELLE AND TOMATO

Recipe recommended by Mrs. C. Rushton featuring chanterelles and tomatoes:—

6 good-sized chanterelles.
3 tblsps. cooking or olive oil.
Fresh or dried parsley.
French's Italian seasoning.
6 medium tomatoes.
1 or 2 garlic cloves.
Tabasco sauce.
Salt.

Wash and clean mushrooms, cut them into small chunks, salt them lightly, simmer them in a little water for about an hour. Drain mushrooms, then add tomatoes cut up in chunks. Add cooking or olive oil, 1 or 2 cloves of garlic cut up fine, a generous bunch of chopped parsley or of parsley flakes, and a dash of Tabasco sauce. Also add a little water if the mixture is too dry. Simmer the lot for about half an hour and serve on hot buttered toast with a few rashers of bacon.

CREAMED CHICKEN OF THE WOODS

Polyporus sulphureus, commonly known as the sulphur polypore or chicken of the woods, is a gourmet's treat, and many claim that it can make an excellent dish when properly prepared. McKenny, in her book " The Savory Wild Mushroom," gives the following recipe:—

1 lb. of tender edges of *P. sulphureus.*
2 tblsps. butter.
1 tblsp. flour.
Salt.
Freshly ground black pepper.
Toast.

Cut up 1 lb. of the tender edges of *P. sulphureus.* Sauté the pieces very slowly in 2 tblsps. butter until they have absorbed most of the butter. Sprinkle them with flour and add 1 cup of cream. Simmer the sauce until it thickens slightly. Season the mushrooms with salt and freshly ground black pepper and serve them on rounds of freshly made toast.

MUSHROOMS WITH SOUR CREAM

Wash, drain, and slice a pound of mushrooms of any good edible variety, but do not peel them. Heat 2 tblsps. butter in a saucepan, add a small onion chopped fine and the mushrooms, and sauté together for 5 minutes. Season with salt and pepper then sprinkle with 1 tblsp. flour. Mix well and simmer for a few minutes under a lid. Now stir in 3 tblsps. of sour cream but do not let it come to a boil. Add a few drops of lemon juice or a few drops of Worcestershire sauce.

MUSHROOM SALAD

Fry sliced field mushrooms or chanterelles in butter until browned, chill and mix in equal proportions with cooked and chilled potatoes cut into rounds, strips of raw celery, season with salt, pepper, olive oil, and wine vinegar.

R.D.M. MUSHROOM SAUCE

This is a recipe recommended by Claude Favelle, and named " Sauce R.D.M." in honour of the Revue de Mycologie, in which it was published (Vol. 13, No. 1, 1948):—

" Brown a suitable quantity of onions, with garlic added if desired. With them at the same time fry small strips of bacon, diced fat pork, or raw diced ham if preferred. When everything is well browned, remove the meat. Add one or two dessert-spoons of flour, according to the amount required. Dilute with water or white wine, being sure that the sauce remains fairly thick. Season with salt and pepper; add a little tomato paste and a nice bouquet garni of herbs.

" Dice and add the mushrooms you have gathered, even the less delicate kinds (Mycenas, Collybias, Clitocybes, etc.). Let the mixture simmer over a very slow heat for at least forty minutes, so that the general flavour permeates all the mushrooms. Remove the bouquet garni, put back the diced meat and serve."

This recipe also suggests that small sausages can be added and the whole garnished with croutons browned in butter. This sauce can be used with meat or fish or served in a vol-au-vent.

SUKIYAKI

McKenny, in her book " The Savory Wild Mushroom," gives an interesting Japanese recipe:—

" Slice 1 cup of Japanese or pine mushrooms, blanch and discard water. Cut up 1 cup celery, 1 cup green pepper, and 1 cup fat green onions in inch pieces.

" Have the butcher cut ½ pound of tender beef in very thin strips. Put the mushrooms and beef in the centre of a large frying pan, put the celery in one corner, pepper in another, and onions in another. Then pour in 1 cup of soy sauce and ½ cup of saki or a dry white wine, and stew the combined ingredients (covered) until the beef and mushrooms are tender. The vegetables will be cooked, but still crisp.

" Have ready a bowl of cooked rice, dry and fluffy, put a generous helping on a plate, place beef, mushrooms and vegetables—a tablespoonful of each—on the rice and spoon the sauce over all. Serves four."

This recipe may be varied by using cooked chicken or pork sliced very thin. Other mushrooms can be substituted for the Japanese, but they should be firm, like chanterelles or the sulphur polypore.

PICKLED MUSHROOMS

Lactarius deliciosus, Armillaria melea, and *Boletus edulis* are much favoured by Europeans and considered as probably the best pickling mushrooms. Many recipes can be found in various gourmet cook books describing how to preserve suitable species in salt or vinegar. The authors recommend the pickling method described by Pilat (1954):—

" A simple, quick and cheap way of preserving mushrooms in vinegar is as follows:

" The cleaned and washed mushrooms are cut into fairly large pieces. Small caps are kept whole. We put them into a pot, fill it to half way up with water, add salt, pepper, throw in bay leaves and boil for 20 minutes. The pot is then taken off the fire, the water is strained off (by evaporating the strained off water we obtain mushroom extract); the boiled mushrooms are mixed with a sufficient amount of raw onions transversely cut into wheels, or also half-boiled carrots cut into wheels are added. The mixture is then loosely packed into preserving jars and undiluted and slightly sugared but unboiled vinegar is poured over it. The jar is then covered with a lid and sterilization is done by half an hour's boiling. The mushrooms must not of course be pressed together when packed, as otherwise the vinegar would not penetrate them sufficiently well. Mushrooms thus preserved can, after sterilization, keep indefinitely, provided of course the glass really does close hermetically."

SALTED MUSHROOMS

One of the best methods of preparing mushrooms for winter use is by keeping them in brine. This is a favourite method in Russia and Eastern Europe. Certain species such as *Lactarius deliciosus* and *Boletus edulis* can be placed dry in wooden barrels or crocks, in thin layers with a layer of salt between. Coarse salt is preferred.

To keep mushrooms submerged in the brine, a wooden lid is placed on the top layer. It is advisable to cover the surface with cheesecloth before placing the lid in position. To prevent mould from forming when the mushrooms are kept for a longer period, the lid and cheesecloth should be taken off and washed from time to time. Some recommend the addition of herbs to the salted mushrooms. They are commonly used for hors-d'œuvres and make a splendid addition to many raw salads.

DRIED MUSHROOMS

Mushrooms to be dried are cleaned and cut into thin slices. Spread on paper towelling and put in a warm dry place. Turn pieces regularly so that drying is even and rapid. Drying may be hastened by placing in a warm oven, leaving the door partially open for air circulation.

Another method, requiring a little more time but often yielding better results, is to string the thin slices on thread. The thread is then hung in the kitchen or any warm dry place. Drying usually is more rapid with this method.

Dried mushrooms must be stored in insect-proof containers. They can be powdered for storage and are excellent for sauces and stews or soups.

MUSHROOM POISONING

The number of poisonous species of mushrooms is very small as compared to the total number of mushroom species. However, the fear of these is sufficient to cause many people to avoid mushrooms of all types. Mushroom poisoning has possibly been overemphasized in the English-speaking countries. Yet the drastic types of poisoning by some species is sufficient cause for the utmost caution in selection of mushrooms for food.

The poisonous mushrooms are grouped usually on the basis of the type of poisoning they cause. These are as follows:—

1. THE PROTOPLASMIC POISONS.—Cause severe and rapid deterioration of the liver, heart, kidneys, and skeletal muscles. These toxins have a delayed action, with no ill effects being felt

for some time after their ingestion. The three most notorious fungi containing toxins belonging to this group are *Amanita phalloides, Amanita verna,* and *Amanita virosa.* After eating these, no symptoms of mushroom poisoning appear until 8 to 40 (usually 10 to 20) hours have passed. Then, very abruptly, violent vomiting, abdominal pains, diarrhœa, sweating, and other symptoms appear. The symptoms may subside after a time but then recur. Death occurs in two to five days in more than 50 per cent of the cases where these mushrooms have been eaten. As little as 1 teaspoonful has been known to cause death.

A similar type of poisoning is caused by the false morel (*Gyromitra esculenta*). Here the latent period is commonly 6 to 8 hours, but it may be as little as 2 hours. This species is eaten regularly by some, and there is as yet no satisfactory explanation for the irregular occurrence of poisoning by it. The most logical possibility is that a toxic substance is formed only as the fruiting bodies age. Many Europeans boil these mushrooms, discarding the water used for this purpose; they then cook them in various ways. It is thought that the toxin is water-soluble and that it is removed by boiling. Since poisoning by this species, though sporadic, is severe and can be fatal, one would be well advised not to eat it.

2. NERVOUS SYSTEM POISONS.—These are of several types, depending upon the mushroom species involved.

Two species of *Amanita, A. muscaria* and *A. pantherina,* contain a poisonous substance called mycoatropine. There is only a short lapse of time between ingestion of these mushrooms and the appearance of symptoms. Muscle spasms, excitement, hallucinations, and behaviour suggesting alcoholic intoxication are the typical symptoms. A second poison, muscarine, is present in varying amounts in these species. It causes profuse sweating, reduction in pulse rate, and constriction of the pupils. Death is infrequent in poisoning by these species, and recovery is usually rapid.

Muscarine was originally found in *Amanita muscaria* but is not present in either this species or *A. pantherina* in large amounts. It is much more abundant in certain species of *Inocybe* and *Clitocybe.*

A third type of toxin, psilocybin, also affects the nervous system. This or related toxins are found in species of *Psilocybe,* *Stropharia, Conocybe,* and *Paneolus.* The symptoms here involve hallucinations, anxiety, depression, and others. Recovery is complete after several hours, and fatalities are unknown with this type of poisoning.

3. GASTRO-INTESTINAL IRRITANTS.—A number of mushrooms of different genera — e.g., *Russula, Lactarius, Boletus, Rhodophyllus, Tricholoma*—can cause vomiting, abdominal cramps, and diarrhœa. The symptoms may disappear rapidly after vomiting and, in any case, do not usually last more than one or two days. Of these fungi, *Entoloma lividum* is the most dangerous. It has been reported to cause death of children who have eaten it. Symptoms with this species often persist for some time and can include liver damage.

POISONOUS MUSHROOMS OF BRITISH COLUMBIA

Only one of the deadly amanitas, *Amanita virosa,* is known to occur regularly in North America. This species is found only in the eastern part of the continent and is probably responsible for most fatal cases of mushroom poisoning in that region. *Amanita phalloides* has been reported from this continent, but most of these reports are based upon misidentifications. The few authentic collections have been from the west coast, and all were found adjacent to shrubs imported from Europe. It is possible that there could be sporadic occurrence of these species in British Columbia. In addition, a green-capped species similar to *Amanita phalloides* was recently found in Oregon. A chemical analysis revealed that one of the deadly toxins was present in this species.

There is an abundance of other amanitas in this area. The most commonly found species are *A. pantherina, A. muscaria, A. porphyria, A. junquillea, A. sylvicola,* and *A. calyptroderma.* Of these, *A. pantherina* and possibly *A. muscaria* are responsible for most cases of poisoning. *A. pantherina* is especially abundant on the southern end of Vancouver Island and on the Gulf Islands. It can be found from early April through the fall months. *A. muscaria* usually does not appear until midsummer, but is more abundant, especially on the mainland.

Gyromitra esculenta is common throughout much of the Province. It is found in the spring (April and May), and the closely related species, *G. infula,* occurs in the fall. The latter, too, should be viewed with suspicion. In addition to these, we have many of the species causing gastrointestinal disturbances or hallucinations. The list below includes the more common species reported to cause poisoning and occurring in the area.

**Agaricus sylvicola, A. placomyces, A. silvaticus, A. hondensis.*

Boletus eastwoodiæ.

Clavaria gelatinosa.

Clitocybe dealbata—also similar small white clitocybes as *C. bicolor.* These are difficult to identify and several are known to be toxic. *C. illudens* is not known to occur here.

**Coprinus atramentarius.*

Entoloma. Species in most pink-spored genera are difficult to identify. Some, like *E. lividum,* are known to be poisonous and others are suspected. They should be avoided.

Galerina venenata.

Hebeloma crustuliniforme — both *Hebeloma* and the related genus *Inocybe* are well represented in British Columbia. However, the groups have not yet been thoroughly studied in this region. Since a number of poisonous species are known, it would be well to avoid both genera.

**Hygrophorus conicus.*

Inocybe spp. One species, *I. patouillardi,* is responsible for occasional deaths in Europe. Others are known to contain muscarine in relatively large quantities (*see also* under *Hebeloma*).

**Lepiota clypeolaria.*

Lepiota naucina. This is considered to be a choice edible species in most regions. However, there have been several cases of illness in the Pacific Northwest following ingestion of what was thought to be this species. It is possible that another species was involved. If so, it must be very much like *L. naucina* in most characteristics.

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* Species apparently causing difficulties to some people but not to others or for which there are conflicting statements as to edibility.

Lactarius fuliginosus.
**Lactarius lignyotus.*
Lactarius trivialis.
Lactarius torminosus.
**Næmatoloma fasciculare*—reported to be poisonous by some, edible by others. Extremely bitter and possibly only unpalatable.
Paneolus campanulatus.
**Russula emetica.* Some have suggested that all of the peppery russulas should be avoided. Others claim that they are good edible species.
Russula fœtens.
**Russula fragilis.*
Russula vesicatoria. This species causes blistering of the tongue and lips if tasted raw.
Stropharia æruginosa.
Stropharia coronilla.
Tricholoma pardinum.

TREATMENT OF MUSHROOM POISONING

No case of suspected mushroom poisoning should be treated lightly, and one should call a physician immediately. Treatment usually involves cleaning out the digestive tract through use of purgatives and emetics. As a first-aid measure, one can induce vomiting and administer purgatives. Subsequent treatment is dependent upon the mushroom species involved and should be administered by a physician.

It is essential to know the species causing the difficulty if treatment is to be effective. One should save any uncooked or cooked mushrooms if still available when poisoning is suspected. In the absence of these, the stomach contents can be collected and saved. Identification is sometimes possible from undigested portions of the mushrooms.

Treatment, if based upon inaccurate identification, can greatly increase the severity of the poisoning. For example, atropine is an effective antidote for muscarine poisoning. However, it acts synergistically with mycoatropine and should be used with extreme caution in cases of poisoning by *Amanita pantherina* or *Amanita muscaria.* While these contain small amounts of muscarine, their toxic quality stems almost entirely from mycoatropine.

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* Species apparently causing difficulties to some people but not to others or for which there are conflicting statements as to edibility.

GLOSSARY

For terms referring to gill attachment, cap shape, and stem attachments, *see* illustrations (Figs. 8 to 10).

Amyloid: turning blue-black when wet with iodine solutions.

Anastomosing: of gills which repeatedly fork and run together, forming a network.

Annulus: a membranous ring found on mature stems of some species.

Ascus: the microscopic sac-like structure containing spores in the ascomycetes.

Basidium: a microscopic structure bearing spores in the basidiomycetes.

Cæspitose: growing together in clusters.

Campanulate: bell-shaped.

Context: the fleshy inner portion of the cap or pileus.

Cartilaginous: tough, firm, flexible; like cartilage.

Cortina: cobweb-like partial veil of some mushrooms, especially species of *Cortinarius*.

Crisped: finely crinkled or curled.

Deliquescent: liquefying or dissolving.

Evanescent: disappearing, not persistent.

Even: smooth, without irregularities.

Fibrillose: composed of parallel fibres, especially of the cap surfaces in some species.

Fimbriate: fringed, as with the cap margin when the partial veil remains attached to it rather than to the stem.

Floccose: fluffy, wool-like.

Gills: plate-like structures bearing the hymenium and found on the undersurface of the cap.

Gleba: the soft inner portion of puffballs and related forms.

Granulose: covered by small particles or granules.

Hygrophanus: changing colour with changes in moisture; of mushrooms showing marked changes in colour as the pileus surface loses moisture or is wet.

Hymenium: the spore-bearing layer of tissue on the surface of the gills, tubes, teeth, etc.

Hyphæ: minute tubular structures forming the mycelium and the fruiting bodies of fungi (singular, hypha).

Involute: of caps with inrolled margins.

Mycelium: the mass of hyphæ making up the main body of a fungus. It is typically embedded in soil, wood, dung, etc.

Pellicle: skin-like outer layer of the cap.

Pileus: the cap in mushrooms and similar forms.

Plicate: with folds.

Pores: the minute tubules characteristic of pore fungi and boletes. These bear basidia on their surfaces.

Radicating: with a tapering root-like extension at the stipe base.

Reticulate: with a pattern of lines or ridges that form a network.

Ring: *see* annulus.

Rhizomorph: a string-like aggregate of hyphæ, often visible at the basal end of the stipe.

Sessile: of a cap or pileus without a stem.

Striate: with lines or minute grooves. Common on the upper surface of the pileus near its margin or on the stipe.

Stem: *see* stipe.

Stipe: the stalk or stem-like portion of a fruiting body.

Stuffed: referring to stems having a distinct central area, the soft filling of which often disappears with age.

Tomentose: densely matted with a covering of soft hairs.

Trama: the fleshy layer immediately below the hymenium.

Umbonate: having a raised central mound or peak, an umbo.

Undulate: wavy.

Viscid: of a cap or stipe which is covered by a slimy or slippery layer when wet. This becomes sticky as it starts to dry.

Volva: cupulate remnant of the universal veil found at the stipe base.

Zonate: having zones, frequently in the form of concentric rings on the pileus surface.

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